

# The MILLING WORLD

## and CHRONICLE

### OF THE GRAIN and FLOUR TRADE.

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#### TREATISE ON FLOUR.

By M. Baland in *Journal de Pharmacie et de Chémic.*  
I.

THESE tests were made for the purpose of determining the requirements necessary to retard the changes in the flour provided for the war department, respectively to increase its keeping qualities. The flour used was ground from hard wheat, weighing not less than 77 kilogrammes per hectoliter, or from soft wheat weighing at least 74 kilogrammes. Our mills produce, as a rule, on burr stones 70 per cent. of first flour from hard and 68 per cent. from soft wheat and for the use of the war department enough of the darker flours are added to produce 88 per cent. from hard and 80 per cent. of flour from the soft wheat. A bread baked from such flour is, as a rule, a medium between first quality and second quality bread of civil life.

We will follow now the changes in these different flours as they become older, and, later on, find how these changes can be retarded. We know from experience that flour must be of a certain age to give the best results in bread making; this is mostly obtained when used two or three months after its reduction. After that it does not improve any more, although it may retain all good qualities for some time to come, but after the lapse of a certain period, changes occur more or less rapid and more or less extensive.

The percentage of gluten was obtained in the same manner for all samples: An even dough was made from 25 grammes of flour and 10 ccm. of cold water and kept in that state for 25 minutes. Then the starch was washed out through a fine sieve by means of a thin stream of water, and as soon as the water remained clear, the surplus water was squeezed out of the gluten and the product weighed. All the following figures are given for every hundred parts:

1. American red wheat, weighing 77.4 kilogrammes per hectoliter; harvested in 1880, ground in May, 1882:

	Water.	Sugar.	Fats.
First flour .....	12.22	1.24	1.10
Flour from 1st mid'lgs.	12.39	7.20	4.35
Flour from 2d mid'lgs.	12.31	7.50	4.40

These analysis were made in December and the results varied but little in succeeding periods. The acidity, however, was very changeable. It increased, rather slowly, during the first eight months when the samples were kept in well stoppered flasks.

The gluten decreased in consistency while the weight of the soluble, and of those nitrogenous substances which are soluble in acetic acid, remained almost the same.

Twenty grammes of flour mixed with 100 ccm. of acetic acid of a density of 1020 in a closed flask, always increased the density of the acid after 24 hours to 1029 with the first flour, to 1036 with the first middlings and 1037 with the second middlings flour.

The fats lost their agreeable odor and turned rancid. The changes in the acidity thus produced were as follows:

	January 4.	April 12.
First flour.....	0.048	0.079
First middlings flour...	0.248	0.557
Second middlings flour.	0.205	0.612

2. Russian soft wheat, weighing 78.4 kilogr. per hectoliter, harvested in 1880 and ground in October, 1882.

	Water.	Sugar.	Ashes.
First flour.....	14.56	1.55	1.45
First mid'g flour...	12.27	4.70	3.30
Second mid'g flour.	12.74	6.40	3.27

The moisture contained in the flour varies a little with the degree of moisture in the atmosphere. During damp weather it is increased as much as one per cent. The changes in the gluten did not vary from those in the American Red Wheat; the density of the acetic acid, originally 1020, increased with the first flour to 1029, with the first middlings flour to 1035 and to 1038 with the second in November, which figures did not change at another test made in April following.

The changes in the acidity were as follows:

	Nov. 11.	Feb. 24.	April 22.	June 6.
First flour.....	0.023	0.053	0.071	0.081
First mid'g flour....	0.125	0.466	0.558	0.609
Second mid'g flour..	0.144	0.593	0.681	0.762
The regulation flour, containing 80 per ct. of the cleaned wheat.	—	0.057	0.031	0.101

This latter flour, which contained 39 per cent. of gluten in November, held only 33 per cent. in the following June.

3. American soft wheat, weighing 79.4 kilo. per hectoliter, harvested in 1882 and ground in November, 1882:

	December 8.	Water.	Sugar.	Fiber.	Ashes.
First flour.....	12.75	0.95	0.56	0.71	
First mid'g flour...	12.92	2.75	2.72	2.12	
Second mid'g flour.	13.16	4.75	7.02	2.86	
80 per cent. flour. ..	—	1.25	—	—	

The variations in the acidity were as follows:

	Dec. 8.	Feb. 25.	April 19.	June 9.
First flour.....	0.011	0.048	0.063	—
First mid'g flour....	0.056	0.210	—	—
Second mid'g flour...	0.077	—	0.556	—
80 per cent. flour .....	—	—	0.104	0.122

The density of the acetic acid changed from 1020 to respectively 1029, 1033, and 1038. The first flour gave 32 per cent. of gluten in December and 29 per cent. in April; the 80 per cent. flour held 36 per cent. in December, 24 in April and 20 in June.

4. Indian hard wheat, weighing 80.4 kilos. per hectoliter, harvested in 1882 and ground in March, 1883.

	April 9.	Water.	Sugar.	Fats.	Fiber.
First flour.....	12.29	1.12	0.95	0.57	
First mid'lgs flour.	11.45	2.57	3.50	1.25	
Second " " " "	12.56	2.57	2.45	—	

Another series of tests made June 17 did not show any appreciable difference in these constituents of the flour. The acidity was distributed as follows:

	April 9.	May 21.	July 18.
First flour.....	0.031	0.035	0.050
First middlings flour...	0.082	0.146	0.264
Second " " " "	0.146	0.228	0.406
88 per cent flour.....	—	0.038	0.071

First flour gave 39 per cent. of gluten in April and in July; the 88 per cent. flour held 41 per cent. at corresponding times.

The density of the acetic acid of 1018 rose in April and in June to 1027 with the first flour, to 1032 and 1033 with the first and second middlings flour and to 1028 with the 88 per cent. flour.

5. Russian soft wheat, harvested in 1881, ground in June, 1882, to a 80 per cent. flour.

The gluten found in the flour in July amounted to 45 per cent.; on February 23 of the following year it was reduced to 35 and on May 22 to 32 per cent.; the acidity changed from 0.093 in February to 0.110 in May.

6. Eighty per cent. flour made from American red wheat, harvested in 1882, and ground in January, 1883:

	Acid.	Gluten.
March 24.....	0.035	31.5 per cent.
April 26.....	0.055	—
June 5.....	0.071	27 " "

7. Another sample made from American red wheat from the same harvest, ground in February, 1883:

	Acid.	Gluten.
April 21 .....	0.040	30.5 per cent.
June .....	0.066	27 " "

8. Eighty-eight per cent. flour from Indian hard wheat, harvested in 1880 and ground in January, 1882:

	Acid.	Gluten.
July, 1882 .....	—	42 per cent.
Feb. 23, 1883.....	0.051	44 " "
May 22, 1883.....	0.053	41 " "

9. Another sample from the harvest of 1881, ground in November, 1882:

	Acid.	Gluten.
January, 1883.....	0.025	44.5 per cent.
March, 1883.....	0.035	—
June, 1883.....	0.055	40.5 " "

10. Sample from the same harvest, ground in December, 1882:

	Acid.	Gluten.
Feb. 9, 1883.....	0.025	39.5 per cent.
March 24, 1883.....	0.035	—
June 6, 1883.....	0.055	37.5 " "

11. Sample of the same harvest, ground in January, 1883:

	Acid.	Gluten.
March 23, 1883.....	0.026	35 per cent.
April 26, 1883.....	0.040	—
June 5, 1883.....	0.050	34 " "

12. Flour made by the Hungarian system from Indian hard wheat harvested in 1882:

	Acid.	Gluten.
Flour from the first four breaks	0.020	36 per cent.
Flour from bran of fifth break	0.020	49 " "
Flour from first and second middlings.....	0.020	32 " "
Flour from fourth mid'g.	0.020	30 " "
Flour from fifth middlings...	0.025	30 " "
Total flour from all the mid-dlings.....	0.025	35 " "

The flour from the first four breaks contained 1 per cent. of sugar and 1.95 per cent. of fiber; the flour from the fifth middlings held 1.5 per cent. of sugar and 0.70 per cent. of fiber.

13. Mixed wheat, one-fourth from California and three-fourths from from the north, reduced on rollers June 11:

	Acid	Gluten.
Flour from the first four breaks.....	0.015	25 per cent.
Flour from the bran of the fifth break .....	0.017	38 " "
Flour from the first and second mid-dlings.....	0.017	27 " "
Flour from the other middlings....	0.040	36 " "
Flour obtained from brushing the bran .....	0.091	32 " "
Whole flour .....	0.015	30 " "

14. Mixed wheat, one third Indian hard wheat and three-fourths home product, ground on stones July 18:

	Acid.	Gluten.
The equivalent of the flour obtained from the bran of the fifth break...	0.020	30 per cent.
Flour from all the middlings.....	0.025	33 " "
Whole flour.....	0.025	32 " "

The first of these three contained 1.05 per cent. of sugar, and 0.35 per cent. of fiber; the second 1.40 per cent. of sugar and 0.30 per cent. of fiber.

15. Flours produced on stones, older than one year:

	Acid.	Gluten.
California soft wheat harvest 1881.	0.076	22 per cent.
Chili soft wheat harvest 1881.....	0.076	22 " "
Mixture of various wheats.....	0.106	22 " "

16. Roller flour older than one year:

	Acid.	Gluten.
Belgian flour, mixed of		
American 30		
California 20		
Indian 20		
Poland 10		
Belgian 10		
Manchester flour		
2/3 California		
1/3 British	0.121	5 per cent.

#### FANCY WHEAT GRADES.

Says the Monetary times: The Winnipeg Commercial has an article under this heading, in which it states that, "it is understood that the appointment of a grain inspector at

Port Arthur cannot take place until the Dominion Parliament meets and so amends the inspection act, as to allow of the fixing of hard wheat grades in the province of Ontario, that privilege being possessed as yet by Manitoba alone," and that "the gentlemen selected for the position by the C. P. R. General Manager must stay until then simply as examiners of grain, with no legal power to fix beyond dispute the grades of grain coming under their inspection." The Commercial is of opinion that a legal system of grain inspection is a necessity in Winnipeg and at Port Arthur. And it adds: "A great many people in the Northwest have fallen into the mistaken belief, that grain inspection for this country will have the effect of raising the grade of the bulk of our wheat to No. 1 hard, and the balance to No. 2 hard, and before the present crop is all marketed there will be many disappointed men among our farmers. The Examining Board of the Winnipeg Board of Trade in fixing the standards of grades for the city, have carefully weighed this fact. They know that from a state of chaos in our grain handling, to a system of strict and equitable inspection, is a big stride to make in one season. They have therefore, been careful to make the standards equal to that of Minneapolis and Duluth, the only other hard wheat markets on this continent, but they have had the wisdom not to exact any higher standard for this season at least. The fact that the Examining Board is composed entirely of experienced grain dealers accounts for this wise action, and what they have done will no doubt do much to lessen the annoyance which a grain inspector has to encounter during the first year of an inspection system."

Objection is taken by the Winnipeg journal to the action of Mr. Van Horne, in the matter. "Let us see" it says, "what Mr. Van Horne's standards are. Duluth and Minneapolis inspection places No. 1 hard at 58 lbs. to the bushel minimum weight: and No. 2 hard at 56 lbs. Mr. Van Horne has fixed No. 1 hard at 60 lbs., and No. 2 hard at 58 lbs. Duluth and Minneapolis inspection fixes the minimum weight No. 1 spring at 58 lbs. to the bushel, No. 2 spring at 56 lbs., and No. 3 at 54 lbs., while Mr. Van Horne has manufactured a new grade. This he calls Fancy No. 1 hard, and the minimum weight of this he fixes at 62 lbs. to the bushel. These are Mr. Van Horne's own grades. Duluth, Minneapolis, Milwaukee, Chicago, New York, Winnipeg, Toronto, Montreal, and even Liverpool, may have been guided hitherto by other standards, but they must change in deference to the opinions of the C. P. R. General Manager. As already stated, it will be difficult enough during the first year, to enforce an inspection equal to that of other grain centres, but to enforce a system of inspection which would not admit of 100 cars of No. 1 hard out of our five to six million bushels of surplus wheat, shows only how little Mr. Van Horne knows about the grain wants of this country, and how poorly he measures them. When statistics of a season's shipments are reached, as they will be annually, it will be seen that somewhere about 1 per cent. of our exported wheat reached the grade of No. 1 hard, while Minnesota and Dakota with grades two pounds lower, will show a much larger proportion. It is to be regretted that the C,



P. R. General Manager set his face so firmly against the arrangements made for inspection at Winnipeg, as their workings cannot in any way injure the interest of the C. P. R., but on the contrary will be an advantage to the Company. Until the inspection act is amended it is an insuperable barrier to inspection of hard wheat anywhere outside of Manitoba. The Winnipeg Board of Trade consulted the C. P. R. Superintendent before attempting to perfect their arrangements, thus showing their anxiety to avoid inconvenience to the Company as much as possible. Although their overtures were not taken advantage of, there is no doubt but the Board are still willing to act in the same spirit, and about the best course the C. P. R. managers could adopt, would be to apply to the Board, and have matters so arranged for this season, that their inspection difficulties can be overcome. Where there is a will there is a way, and with the C. P. R. managers and the board both willing and anxious to make interests mutual, there are no difficulties about inspection that cannot be arranged to the satisfaction of all concerned."

#### DAKOTA WHEAT.

"Why, about five years ago buffaloes were stamping on my farm, and now it is the centre of a thriving wheat-growing country, with railroads, cities and villages."

The speaker had just returned from Kelso, Traill County, Dakota. He was a Buffalo man who had tried wheat-farming, and in any business transaction would likely prove himself "as shrewd as they make em."

"Yes, I have made twenty-five per cent. on capital invested," said he. "I cannot give you the exact figures, but in round numbers we can calculate well enough to show how it was done. I bought a farm of 1,200 acres, about one mile and a half from the St. Paul, Minneapolis & Manitoba railroad, ten miles from the Red river and five miles south of Hillsboro, a trading village of say 1,200 inhabitants. My farm is at Kelso, a station comprising a depot, an elevator, postoffice, store, and blacksmith's shop. A stream of water runs through the center of the farm. I let the land out to a farmer on these conditions: He was to have a gross half of the wheat, delivered to me at the elevator; was to cut, thresh, haul, and bear all expenses, except for the seed, which I furnished. The farm cost me, stocked with machinery, about \$25,000. Last year I worked nearly 600 acres; this year 960, and next year will work it all. The farm produced for my share about 11,000 bushels of wheat this year. The market price was sixty-six cents per bushel. Deducting taxes, running expenses, and interest on the money, left about \$6,000 profit, with 240 idle acres, upon which \$4 per acre had been spent in breaking it up for next year's crop. When I work the whole I expect to raise that percentage, with a reasonable market, to twenty-eight or thirty per cent."

"Wheat was low this year, and many farmers did not make as much as I did. Then we had a hail-storm about the 1st of August which did considerable damage. The average yield was twenty-one bushels to the acre, though in many places it was twenty-five, thirty, thirty-five, forty, and even forty-two bushels."

"I want to protest against a monopoly which exists there, though it has done as much toward building up the country as the railroads, and even now is a blessing to the small farmer. I mean the elevators. They are owned by a company which built them over the whole wheat country on the line of the railroad when Dakota was first settled. A man who went there put all his money in land. He had none left with which to build a granary or an elevator. The farmer who 'preempted' had no money to begin with, and both were without place to store their

grain. Then this elevator company stepped in, protected by the railroad company, and built store-houses. The latter company will not lay side tracks or connect with elevators of any other company."

"Now when harvest comes the farmer takes his grain to the elevator where it is inspected by the man who has charge and who is under pay of the company. He receives a ticket or 'pay to bearer' for as many bushels as he brought. These tickets are negotiable, and go to pay the grocer or the merchant, and will be cashed at the bank at the current price for wheat. If the farmer does not wish to sell his grain to the elevator company he can let them store it. And there is where one abuse come in, which is not an abuse, I suppose. For instance, the elevator holds 50,000 bushels. As soon as my wheat is stored it is loaded on cars and shipped to Minneapolis, St. Paul, Chicago, Duluth, Buffalo, or maybe to Liverpool, by the elevator company. Other farmers store their grain and the same is done with it. Now the fact is that elevators may be receiving storage money for 200,000 bushels when it may be nearly empty. Still, if I present my receipt and ask for my wheat they will give me as many bushels as I stored, and of the same grade too. Moreover, they have special freight rates with the railroad company. If I am in Buffalo and wish my wheat delivered here from Kelso, I telegraph to them to ship it. They may give me an order for it on Duluth, but I will have to pay current freight rates by rail from Kelso, just the same—as it is presumed that the elevator company has to pay that rate. I cannot find fault, because I get my wheat in Buffalo sooner from Duluth than from Kelso."

"This elevator company has practically a monopoly of the wheat business in Dakota. The farmer cannot store it; and if he does he puts it into their hands as though it were money, and they use it—at the same time they are charging him storage for the same wheat, and perhaps the farmer is paying the elevator company interest on money he borrowed of them to buy his farm with. I went to the principal member of the firm and told him that I was bound to have my wheat in the world's market, and not be forced to sell to one buyer. I told him just how the company was gouging the farmers, and he offered to store my wheat in separate bins, or would give me a receipt for it by which the company would pay me Buffalo prices, or Liverpool prices, or any other market price I wished—less the estimated freight to the market point. That is the way my wheat stored (presumably) in their elevator at Kelso stands now. If I want it here at the Board of Trade at the current price on 'Change, they will send me a check for its value, minus transportation. Don't you see that the result of this arrangement is disastrous to the farmer? Why, he is bearing the market himself all the time, unconsciously, and still complaining of low prices. Because when harvest is over and the grain is moving, the figures are put together to determine the quality of wheat 'in sight.' For instance, Troy has 100,000 bushels, New York 10,000,000, Detroit and Duluth as much more, and altogether perhaps 40,000,000 bushels of wheat are in sight.' Then it is reported, from these farmers who have grain stored (?) at Kelso, etc., that there are say 10,000,000 bushels kept back, when the facts is the whole crop is moving East in cars and vessels, or is stored in Eastern elevators. This great amount of wheat 'in sight' keeps the market down, and the farmer has to suffer from low prices."

"In the East the wheat crop is not the principal product. The farmer can store his comparatively small crop, live on his other produce, and wait for prices. Nobody knows whether he has any wheat, or how

much. If the Dakota farmer could do the same there would be no low prices—the producer would govern the market. He would store his grain and have it in reality and not on paper. He would draw a wagon-load when he wanted to pay his grocer's bill, and the world could not tell how much he had. They might all do that and break the market, you say, but I don't think so. Every article of produce in the East is now held and sold in that way, and the producer governs the market."

"The Dakota farmer is like a man who, for instance, might keep a grocery store in Buffalo. The elevator company comes in, we'll say, and wants to buy some sugar. 'All right,' says the grocer, 'bring your own scales, weigh it out yourself, make the grade yourself, and pay the market price for it.' Who would get the better of the bargain?"

"The remedy for Dakota wheat monopoly is more railroads to compete; more elevators to compete, and legislation to govern the inspection and weighing of grain. I mean to set up scales and weigh my own wheat next year. The temptations for the elevator company to steal are too great."

#### HOW GRAIN AND FLOUR IS TAXED IN THE VARIOUS COUNTRIES.

(SHOWING THE IMPORT DUTIES.)

##### ARGENTINE REPUBLIC.

Grain..... 1 peso 6 centavos per 100kilos.  
Flour..... 4 centavos per kilogram.

##### AUSTRIA-HUNGARY.

Wheat..... ½ florin per 100kilos.  
Rye, Barley, Oats & Maize. ¼ fl. "  
Flour and Meal..... 1½ florin per "

##### BRAZILS.

Barley..... 20 Reis per kilo.  
Wheat Flour..... 8 " "  
Other Meal..... 50 " "

##### EGYPT.

Grain..... Free.  
Flour..... 8 per cent. of value.

##### FRANCE.

Wheat..... 60 ctms. per 100kil.  
Other Grain..... Free.  
Flour..... 1 fr. 20 per 100kil.

##### GERMANY.

Grain..... 1 Mark per 100kil.  
Flour..... 3 " "  
(Drawback on flour 75 per cent.)

##### GREECE.

20 Lep per cantar.  
Wheat and Rye..... 1 Drachme  
Flour (up to the end of 1884)... 4 Drachme  
50 Lep per cantar.  
Flour (up to the end of 1885)... 3 Drachme  
Flour (up to the end of 1886)... 3 Drachme  
Flour (from January 1, 1887)... 2 Drachme

##### HOLLAND.—Free.

##### ITALY.

Wheat and Rye..... 1 Lire 40 per 100kilos.  
Oats, &c..... 1 " 15 " "  
Flour..... 2 " 77 " "

##### PORTUGAL.

Wheat..... 10 Reis per 100kil.  
Maize and Rye..... 9 " "  
Barley and Oats..... 8 " "  
All plus 6 per cent.

##### RUSSIA.

Grain..... 10 Copecks per pound.  
Flour..... Free.

##### ROUMANIA.—Free.

##### SERVIA.

Grain..... 8 per cent. of value.  
Flour..... 1 fr. per 100kil.

##### SWEDEN AND NORWAY.

Grain..... Free.  
Flour..... 1 Krone per 100kil.

##### SWITZERLAND.

Grain..... 15 ctms. per 100kil.  
Flour..... 1 franc.

##### SPAIN.

Wheat..... 4.32 pestas per 100kil.  
Other Grain..... 3.20 " " "  
Wheat Flour..... 6.48 " " "  
Other Meal..... 4.80 " " "

##### TURKEY.—Free.

##### UNITED KINGDOM.—Free.

##### UNITED STATES.

Wheat..... 20 cents per bushel.  
Rye and Barley..... 15 " " "  
Maize and Oats..... 10 " " "  
Wheat Flour..... 20 per cent of value.  
Other Meal..... 10 " " "

#### SPONTANEOUS COMBUSTION.

Liability to spontaneous combustion, however inflammable a material may be when placed in contact with fire, turns on its affinity for oxygen, says the Insurance Monitor. If it oxydizes readily and rapidly it may reach the point of spontaneous ignition; if it oxydizes slowly or not at all, it presents no danger in that regard, so that a sufficiently intimate knowledge of the chemical qualities of things to enable one to determine their friendly or unfriendly attitude towards oxygen is the key to all this line of secrets.

Professor Ordway, in a lecture recently delivered at Chicago, told of several things which do not affiliate with oxygen, and do not promote spontaneous combustion. Among these were benzine and naphtha dynamite, charcoal when a few days old, mineral oils taken from the depths of the earth and some others. The professor also defined very clearly the difference between "spontaneous" combustion and "fortuitous" combustion, the latter including explosions, lightning, heating journals, burning-glasses, etc. We copy here the closing words of his interesting and valuable lecture.

In summing up what is known about spontaneous combustion we may say:

1. Some substances are known to oxydize at the ordinary temperature of the air, and apparently produce no heat on account of the slowness with which the action goes on, but when the oxydizable matter is spread out over bodies which in small bulk expose very extensive surfaces to the air, as on and in loose fibrous or spongy non-conductors, the combination goes on with much greater rapidity and a sensible heat is produced which may accumulate till it is sufficiently high to produce ignition in the interior of the mass.

Of these easily oxydized substances, phosphorus is inflamed by a moderate rise of temperature. The animal and vegetable oils are pre-eminently disposed to change, and when they are absorbed and spread out by combustible fibres, heat is developed and kept up and accelerated by the consequent increase of affinity for oxygen till the whole mass takes fire. And of all cases of spontaneous combustion, the most common and best known are those which occur in masses of oily wool, yarn or cloth.

There are also certain dye stuffs and mordants, like catechu, tannin and salts of iron which when applied to yarns or cloths render them dangerous. There are some varieties of sulphuretted minerals, particularly such as are disseminated in mineral coal which in damp air oxydize slowly but surely, and may in time set the interior of large coal heaps on fire.

2. There are some substances which have no affinity for the oxygen in air of ordinary density at low temperature, but which have the power of absorbing and condensing in their pores many times their bulk of any gas in which they are immersed. In the air they take in a mixture richer in oxygen than common air. By the absorption and condensation, heat is produced and the temperature may be thereby raised so high that chemical combination will ensue. The only



substances of this class that are of any importance are freshly made charcoal of wood or peat and freshly mined mineral coal.

3. Some chemical compounds or mixtures containing a large amount of oxygen in chemical combination are liable to spontaneous change which may cause combustion or explosion. Of this sort are the mixture used to produce aniline black on cotton, the pyrites of lead which have been used to weight silks, nitro-glycerine and some compositions or mixture for fireworks.

4. The accidental commingling of some chemicals and combustibles may cause combustion or explosion without the previous presence of fire or flame. So nitric acid sets fire to resinous wood; so oil of vitriol cannot with safety be dropped on a mixture of chlorates or manganates with combustible substances.

5. Fortuitous, but not spontaneous, combustion may arise from sparks produced by millstones or from electric sparks. It might even be caused by the friction of a swift belt against wood.

6. It is not impossible that peculiar electric or other conditions of the air may considerably increase a tendency to spontaneous combustion, and indoors such conditions are by no means uncontrollable.

7. If we would guard against trouble from dangerous substances we must prevent heaping them up in close places. We must ventilate; ventilate thoroughly. We must "divide and conquer."

#### IGNITION OF FLOUR DUST BY ELECTRIC LIGHTS.

A short reference was recently made to the above subject in THE MILLING WORLD. As the matter of lighting mills by electricity is receiving more and more attention, the following particulars of the experiments made in Germany, as given by the Spectator, may be of interest to our readers:

Herr Boher, illumination inspector of Dresden, has been making some experiments to determine what part is played by electricity in causing explosions of flour dust in mills. His investigations have been conducted at the Royal Court Theatre, where the powerful dynamos for the electric lights are driven by steam power. "Here," the inspector says, "the electricity from the belting is so intense that more could scarcely be obtained in the best electric machines. Leyden jars became charged by this means in a few seconds, so that on being discharged sparks leap one and three-fifths inches. Any person standing on an insulator and placing the hand within four to six inches of the moving belts, is quickly charged with electricity, so as to give out long sparks. Geissler tubes, having projecting pointed wire at one end, and metallic connection with the earth at the other end, glowed, when placed near the belts, with beautifully colored lights. In short, every experiment possible with electric machines can be performed by this belt-developed electricity. At first I thought that the presence of the dynamo-electric machines had a great influence on this phenomenon, but I have noticed the same, more or less shown, in many kinds of factories having steam power.

"In many flour and meal mills the dust has become ignited without the cause having been discovered. I have now, from experiments, become firmly convinced that electricity developed by belts can cause such disaster. In most factories, other than flour mills, the quantity of metal present, and the arrangement of the iron-framed machines, is such that a connection among them is established sufficient to conduct safely away the electricity. It is, however, different in flour mills, especially where French burr stones are used, which are made of separate pieces bound together by thick iron bands. The latter are not connected with another, but isolated by the non-conducting

stone. Rims, therefore, which are next to the driving pulleys and belts (generally located just below stones when cog-wheels are not used, and pulleys almost equal in diameter to the stones), become surcharged with positive electricity—as shown in the Leyden jar, for instance—the next nearest rim or rims will, by induction, develop negative electricity. These opposite forms of force having arrived at a dangerous degree of tension, the leaping of an intense spark from one stone band to another, could ignite the excessively inflammable flour dust. To guard against this danger, it is simply needful to collect the iron spindles of the stones together by a thick wire, a metallic bar being at the same time located nearly touching both stone rim and driving pulley. In all other industrial works the precaution would be advisable that no isolated ironwork should be near pulleys and belting when combustible materials are also in the immediate neighborhood."

#### SAFE LUBRICATING OILS.

The standard of a perfectly safe lubricating oil, free from spontaneous combustion, which was established by the experiments of the Boston Manufacturers' Mutual Fire Insurance Company, is as follows: A mineral of "paraffine" oil, so called, bearing:

- 1st. A fire test of 300° or more.
- 2d. An evaporation of 5 per cent or less in twelve hours, at a constant heat of 140°.
- 3d. The greatest degree of fluidity consistent with keeping the oil upon the bearing.

There are now few or no oils offered to the members of the mutual companies by oil manufacturers of repute which do not meet this standard; but there are some of the members who prefer an admixture of fine animal oil to give more body to the lubricant.

To this end high-grade neatsfoot oil is sometimes mixed with mineral oil, and so long as the oils remain thoroughly mixed as much as 25 per cent of neatsfoot oil may be safely used. But five recent cases of spontaneous combustion (fortunately all extinguished without loss) have called attention to a tendency in these oils to separate, so that the neatsfoot oils was applied nearly free from mineral oil, and in such cases fire has ensued. Great care should therefore be taken that mixed oils are kept in safe condition by frequent agitation or stirring.

#### SACCHARIFICATION OF DIFFERENT STARCHES.

In spite of all that has been written and said concerning the saccharification of the different starches, there is still much difference of opinion, and the practical applications of theoretical opinions have not always been attended with success we are told by the Chemical Review. In dealing with the conversion of starch into sugar, the fact has frequently been overlooked that starches vary very considerably; the starch of barley is in many respects different from the starch of maize, and the starch of rice differs from both; this difference is not in the chemical composition, for all the starches are identical in this respect, but in their physical properties; the size and aggregation of the different starch cells have a most important bearing on the problem which has engaged so much attention and research of late. From the following table it will be seen how greatly the cells of the starches vary in size; the dimensions are given in decimals of an inch:

Potato. . . . .	.00270 to .00148
Maize. . . . .	about .00074
Dari. . . . .	" .00074
Wheat. . . . .	.00185 to .00009
Barley. . . . .	about .00073
Oat. . . . .	about .00037
Rice. . . . .	.00020 to .00002

It will thus be seen that the sizes of starch cells vary between very wide limits, and it has been established by some experiments

of Symons and others that the smaller-sized starches resist the action of moist heat much more than larger ones; the cells of potato starch, for instance, tumefy and burst at a temperature several degrees below those of rice starch; this question of tumefaction of starches has a very important bearing on their saccharification, and scarcely sufficient attention has yet been paid to the subject. The larger the starch cells, the more compact and dense are their cell walls, and thus the greater is the resistance to the disintegrating influence of heat; diastase, also, has comparatively little action on the outside of the starch cells; the cells must be burst or broken, so that the diastase can penetrate into the interior for this agent to exert its full saccharifying action.

If this view be correct, the difficulty of conversion of the starches must be in direct proportion to the sizes of the cells, and the experience of practical men will probably confirm this, for although rice is a brewing material which presents many advantages as regards price and purity, it is not saccharified with the same ease as maize or potato starch, unless previously submitted to some treatment by which its starch cells are ruptured. Before the solution of this problem can be satisfactorily effected, the physical as well as the chemical properties of starch must be taken into consideration, and it is in this direction that further investigation is needed.

THE Grocers' Advocate has the following account of an ingenious contrivance to take the place of matches. Take an oblong vial of the whitest and clearest glass, and put into it a piece of phosphorus about the size of a pea. Pour some olive oil heated to the boiling point on the phosphorus, fill the vial about one-third full and then cork it tightly. To use the novel light remove the cork, allow the air to enter the vial and then recork it. This empty space in the vial will become luminous, and the light obtained is equal to that of a lamp. When the light becomes dim its power can be increased by taking out the cork and allowing a fresh supply of air to enter the vial.



#### HOW DOES THIS SUIT?

"Cooch's Bridge, Del., Aug. 25, '84.  
"Messrs. Kreider, Campbell & Co.,  
"Philadelphia, Pa.

"Gentlemen: Your machine was sent here against an —, on condition that we should keep the best, and we tried each machine, and are frank to say that if your machine cost us \$500 and the other was offered us as a present we should take yours, as we cannot find a fault with it. The above machine has a capacity of 50 bushels per hour."

We think best not to publish name, but it will be given upon application. Address, KREIDER, CAMPBELL & CO. Philadelphia, Pa.

#### BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO.,

Columbus, Ohio.

Office and Factory, 5th Street, north of Naughten.

#### BUCKWHEAT FLOUR

Always commands a better price, and gives better satisfaction to the consumer when made by the aid of Cransons' Silver Creek Roller Buckwheat Shucker. This is a fact which we can demonstrate to any miller who will write us.

G. S. CRANSON & SON,  
Silver Creek, N. Y.

## SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1½ cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or \$1 for four insertions. Cash must accompany the order. When replies are ordered sent care of this office, 10 cents must be added to pay postage.

#### WANTED.

A Miller, competent and who has had experience with rolls. COLTON BROS., Bellefontaine, Ohio. 236

#### FLOUR MILL FOR SALE.

Water power. On railroad track. First-class order. Good wheat country. For information address, NATIONAL STATE BANK, Boulder, Col. 232

#### SECOND-HAND WATER WHEELS.

Several Leffel water wheels, thoroughly repaired, and in good order. Write for sizes, condition, prices, etc., to JAMES LEFFEL & CO., Springfield, Ohio. 2027

#### MILL FOR SALE.

A steam feed mill located near Ridgefield, McHenry Co., Ill. In perfect running order, with a good trade. Will sell cheap. Address, C. H. ORMSBY, Ridgefield, Ill. 2528

#### WANTED.

A practical mill man for a partner, or will sell a first-class merchant mill, with cotton gin attached. Finest location in America. Address, JOHN ESTES, Abilene, Taylor county, Texas. 1821

#### FOR SALE.

Two Double Odell Roller Mills 9x18; One Double Allis Roller Mill 9x18; One No. 1 Double Case Purifier. We want to buy a 9x30 Double Roller Mill. COLTON BROS., Bellefontaine, Ohio. 236

#### A BARGAIN.

One 16-inch under-runner, full iron frame, middlings mill, made by C. C. Phillips, Philadelphia. It is brand new, has never been used, and will be sold at a big bargain as I have now no use for it. Address C. 91, care THE MILLING WORLD, Buffalo, N. Y. 11

#### YOU CAN BUY THESE CHEAP.

Three McCully Corn Cob Crushers. The above articles are brand new, in perfect condition, just as they left the factories, and will be sold very cheap for cash. Address S. 30, care THE MILLING WORLD, Buffalo, N. Y. 11

#### FOR SALE.

A fifty-barrel steam flour mill, 3 run of burrs and five sets rolls, with other necessary machinery; all nearly new, and doing good work. An upright Payne 50-horse power engine. Price, \$10,000; terms easy. J. H. DEARBORN, Silver Lake, Kan. 251

#### A GOOD CHANCE.

Valuable water power and buildings to rent in Lockport, N. Y. About 1½ acres of land, on which are stone buildings, with slate roof; connected; three stories high; 151x35 feet on the ground, with 140-horse power Leffel turbine water wheel. Will be rented or sold on liberal terms. Apply to L. A. SPALDING, Lockport, N. Y. 232

#### FOR SALE CHEAP.

One 6-horse power engine and 10-horse power boiler, all complete, price, \$350; one 8-horse power engine and 10-horse power boiler, price, \$375; one 10-horse power Portable complete, price, \$350; one 10-horse power Russell Traction, price, \$500; one 4-horse power vertical engine, price, \$120. Call or address for particulars EZRA F. LANDIS, Lancaster, Pa. 262

#### FOR SALE.

A four-run New Process water power flouring mill, and 160 acres of very choice land; 40 acres of young timber. Situated in Colfax county, Neb. Mill in good repair. A never-failing water power. All facilities for making first class flour. A good chance to do a first-class paying business. Owners desire to go into other business. This property will be sold at half its cost. Address, J. A. GRIMISON, Schuyler, Colfax county, Neb. 171f

#### HOOP MILL FOR SALE.

A hoop mill now manufacturing hoops from logs, using "Wilson's Patent Cutting Machine," will be sold at a great bargain. Hoops stand A. No. 1 in the market, and have an established trade for the full cut, over two million made and sold so far this season. The stove and heading business should be added, to economical purchase and use of logs. For information and particulars, apply to D. F. CHASE, St. Charles, Saginaw Co., Mich. 25

## SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1½ cents for each additional word. Cash with order. Three consecutive insertions will be given for the price of two.

#### SITUATION WANTED.

By a millstone dresser and practical flour miller, (English). Address, GEORGE WELLS, Richfield Springs, Otsego county, N. Y. Care of M. F. French. 2528

#### SITUATION WANTED.

A married man, who can furnish recommendations from burr and roller millers, wants a situation. Will guarantee satisfaction as to work. Am not out of employment, but wish to change on account of poor water. Am advised by doctors to change my location. J. JERABEK, Hardinsburg, Breckenridge County, Ky. 262





PUBLISHED EVERY THURSDAY BY  
**THE AMERICAN INDUSTRY PRESS**  
 (LIMITED.)

OFFICES, LEWIS BLOCK, SWAN STREET,  
 BUFFALO, N. Y.

G. B. DOUGLAS, - - Managing Editor.  
 THOS. McFAUL, - - General Agent.

#### SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 Per Year, in advance; can be remitted by Postal order, registered letter, or New York Exchange. If currency is enclosed in unregistered letter, it must be at sender's risk.

To all Foreign Countries embraced in the General Postal Union, \$2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

#### ADVERTISING.

Card of Rates sent promptly on application. Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

#### EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

#### MILLERS' ASSOCIATIONS.

NATIONAL.....S. H. Seamans, Sec'y., Milwaukee, Wis.  
 CALIFORNIA.....F. J. Parsons, Sec'y., Oakland.  
 ILLINOIS.....C. H. Seybt, Sec'y., Highland.  
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 PENNSYLVANIA.....Landis Levan, Sec'y., Lancaster.  
 OHIO.....Robt. Colton, Sec'y., Bellefontaine.  
 NEW YORK.....J. A. Hinds, Sec'y., Rochester.

#### OUR CLUBBING LIST.

**NOTE**—You can save money by availing yourself of the following offers. You can please every member of your family by accepting one or more of the following offers. To save money, and at the same time make the family happy, ought to be the main object of every married man's life. See how you can do this.

#### Take these for Yourself.

THE MILLING WORLD, per year.....\$1.50  
 WITH  
 The Builder and Woodworker.....(\$1.00 per year) 2.00  
 American Architect, weekly.....( 6.00 " " ) 6.50  
 American Architect, monthly.....( 1.75 " " ) 2.75  
 American Machinist.....( 2.50 " " ) 3.50  
 Mechanical Engineer.....( 2.00 " " ) 3.00  
 American Agriculturist.....( 1.50 " " ) 2.50

#### Take these for your Family.

THE MILLING WORLD, per year.....\$1.50  
 WITH  
 Harper's Magazine.....(\$4.00 per year) 4.50  
 Harper's Weekly.....( 4.00 " " ) 4.70  
 Harper's Bazar.....( 4.00 " " ) 4.70  
 The Century.....( 4.00 " " ) 4.50  
 Frank Leslie's Illus. Newspaper.....( 4.00 " " ) 4.50  
 Frank Leslie's Popular Monthly.....( 2.50 " " ) 3.50

#### Take these for your Children.

THE MILLING WORLD, per year.....\$1.50  
 WITH  
 St. Nicholas.....(\$3.00 per year) 4.00  
 Harper's Young People.....( 2.00 " " ) 3.00

#### EXPORTS OF BREADSTUFFS.

THE annual report of the foreign commerce of the United States, published by the Treasury Department, for the fiscal year ending June 30, contains a large amount of valuable information. A carefully prepared table clearly indicates the enormous growth of the exportation of bread and breadstuffs during the past twenty-four years, showing an increase from \$24,422,310 in 1860 to \$288,035,835 in 1880, and \$162,544,715 in 1884. Of this last sum wheat and wheat flour, and corn and cornmeal, comprised 95.13 per cent., namely: wheat, \$75,026,768; wheat flour, \$51,139,696; corn, \$27,648,139; cornmeal, \$818,644; a total of \$154,633,157. The rest of the exports con-

sisted of rye, \$4,323,106; rye flour, \$18,876; oats, \$700,694; oatmeal, \$771,471; bread and biscuits, \$847,671; barley, \$403,622, and all other breadstuff preparations used as food \$846,119, making a grand total of \$162,544,715. The exports of wheat and wheat flour during the last ten years have constituted 30.16 per cent. of the total quantity of wheat produced in the country; and the exports of corn and cornmeal only 4.52 per cent. of the total corn product. The total value of the exports of breadstuffs has constituted about 26 per cent. of the value of all the domestic exports of the country during the past ten years.

A large amount of corn is fed to cattle and hogs, and thus virtually constitutes a very considerable part of our exports of animals and their products. The total value of the domestic merchandise exported amounted to \$724,964,852, of which the agricultural products form 73.98 per cent. The Western and Northwestern States contribute almost the whole of the exported breadstuffs, namely 93 per cent. The greatest fluctuation appears in the corn exports, which has ranged during the past fifteen years between \$1,000,000 and \$98,000,000.

It is a significant fact that the total export of breadstuffs during the past fiscal year has been considerably smaller than that of any other year since 1877. In round numbers the value of these exports was \$20,000,000 more in 1878, \$47,000,000 more in 1879, \$125,000,000 more in 1880, \$108,000,000 more in 1881, \$20,000,000 more in 1882, and \$45,000,000 more in 1883. It will indeed be a hard task for statisticians to find a "curve" for these fluctuations. The agricultural interests of the country which represent so large a percentage of the total exports, can be subdivided as follows: Cotton heads the list, 29 per cent; breadstuffs 22 per cent; provisions 15 per cent; oil almost 7 per cent. of the total value.

The growth of internal commerce and of the facilities for internal transportation in the United States, have been promotive of a wonderful development of the resources of the country. The advances made in the various branches of the national industry, have given rise to a degree of individual and national prosperity unparalleled in any other age or country. This abounding prosperity is most strikingly illustrated in the increase of the acreage of improved land in farms, in the number of miles of railroads in operation, in the production of coal, and in the value of the products of agriculture and manufacture.

The rapid development of the material resources of this country has not been uniform or uninterrupted. The commercial and industrial growth of the country has from the beginning been marked alternately by periods of phenomenal prosperity and of phenomenal depression. Experience has, however, proved these fluctuations to be but symptoms of an exuberant and uncontrollable spirit of enterprise outrunning the possibilities of a healthy and well-proportioned development, even in this land of abounding natural resources.

WHILE not exactly in the flour milling line, it will not be out of place to note a remarkable transaction in railroad furnishing which was concluded last week. We have been so often assured that the iron industries of this country could not compete with English manufacturers, that it is very pleasant to have definite evidence of the incorrectness of such assertions. The transaction alluded to is the closing of a contract between the Canada Pacific Railroad and the Lackawanna Iron and Steel Company for 10,000 tons of steel rails, to be delivered along the line of said railroad, for \$28,50 per ton. This contract was secured in

direct competition with several English manufacturers. The New York Commercial Bulletin, commenting on this says: "Aside from a few small sales for Cuba and South America, this is the first export trade in American steel rails, but, it is hoped, not the last. It was alleged in some quarters that the rails are to be made from foreign material, and that the manufacturers will therefore secure a 'drawback.' This, however, is positively denied by officials of the Company in question, who state that all the materials used will be American products. The price accepted is very low, but whether or not it leaves any margin of profit to the manufacturers is problematical and a matter upon which they throw very little light. That the cost of production is covered would not be surprising, however, in view of the fact that, since competition has become unprecedentedly sharp, our largest manufacturers have introduced all known improvements calculated to cheapen the cost of production. Whatever may be the facts as to the financial part of the transaction, it certainly is a most important forward step, and one that may be placed among the greatest achievements in the history of the trade in this country."

A LITTLE note from Mr. C. F. Hall of Moline, Ill., assures us that the Modern Miller is not published in the interests, or at all subjected to the influence or control, of the Barnard & Leas Manufacturing Co., of that place. Mr. Hall says: "I am the sole and only person who is interested financially in the M. M." We are very glad to class Mr. Hall and his paper with the "Independents," and shall regret if our publication of the editorial remarks of the Millwright & Engineer, in a recent issue, shall have in any manner worked him injury. It is a custom, we believe, when a change takes place in the proprietorship of any journal, to announce that fact, but as no such notice or announcement has come under our observation touching the various papers alluded to in Mr. Hoppin's editorial remarks, it was but natural that we should infer he was correct in his assertions.

TEXAS, if one may judge from a correspondent in the Artisan of Nashville, Tenn., is preparing for a great reformation. In the course of his letter, which, by the way, occupies only a column of our contemporary, and purports to give an idea of notable building operations in the "Lone Star" state, he chronicles the completion of a \$75,000 jail at Fort Worth; the progress made on the new jail at Greenville; the letting of a contract for a new jail at Hallettsville; the building of a new \$35,000 jail at El Paso, and the meeting of eight or ten contractors at San Diego to submit plans and estimates for a new jail at that place. These contractors were grievously disappointed, however, as on the day set for opening bids the Commissioners' Court deemed attendance upon a Mexican bull fight more in consonance with the public weal and went over the border in a body to take it in.

THE statistics of flour milling in Germany give the total number of people employed in the industry as 118,091. Of these 45,255 are classed as owners or directors of milling establishments, 2,451 belong to the class of head millers, book keepers, etc., and 70,385 as helpers and laborers. Classified as male and female, we find that 114,970 are men and 3,121 women. The mills employ 6.33 out of every 1,000 of the inhabitants who earn their living. The statistics with regard to age are exceedingly complimentary to millers, as out of the whole of the 118,091, only 1,406 are below 15 years of age.

THE hybrids between rye and wheat, produced on the Rural New Yorker's ex-

perimental grounds, and which were noticed in this paper some time ago, have been planted and sprouted finely, we are told, with the exception of one which scarcely resembled either rye or wheat. These heads were nearly all sterile. Experiments of this kind, may or may not be of practical value; any assertion in that direction would be premature, but it certainly indicates the line on which progress in the cultivation of cereals must be pursued if certain improvements are desired. We hope that the Rural New Yorker will keep on experimenting.

THE paternal government of Germany intends to control everything it seems. The latest report brings the statement that the Commissary Department of the government is not allowed, according to the latest orders, to deal with grain speculators or commission merchants in their purchases of the necessary cereals, but have to buy direct from the producers. The farmers are of course exceedingly jubilant over this new move, which insures to them the full price paid by the Government and will put into their pockets the large share that has been going to the middlemen. The feelings of the middlemen are not reported.

THE attention of our readers is directed to the advertisement, in another column, of the Cultivator and Country Gentlemen, an agricultural journal of such high excellence as to require no recommendation at our hands. It is one of the most widely circulated and closely read papers of its class, and is an acknowledged authority on all matters pertaining to agriculture. We have arranged with the publishers to offer it in club with THE MILLING WORLD, as will be noted from an announcement elsewhere. Sample copies may be obtained from the publishers, L. Tucker & Son, Albany, N. Y.

A PETITION has been presented to the legislature of Bohemia for the appointment of a committee to investigate the condition of the agricultural population and devise means to counteract the wholesale introduction of foreign grain and flour into the markets of Bohemia to the detriment of the native miller and agriculturist. This will undoubtedly lead to another discussion between free trade and protection, which latter seems to be the immediate panacea everywhere, and which will perhaps be adopted in Bohemia to exclude American products.

RUMORS in French parliamentary circles are to the effect that the chamber of deputies will pass a resolution to abolish the duty on cereals at its next session. In spite of the very extensive agitation to increase the tax on imported wheat on the part of millers and agriculturists, common sense seems to prevail in the legislative bodies of the country which do not believe in taxing the necessities of life for the benefit of a few.

ALL subscriptions to THE MILLING WORLD received previous to January 1, 1885 will be entered as of that date, and the balance of the current year will be sent to new subscribers, and such as may renew their subscriptions previous to that date, free. Note our clubbing list, in the first column on this page, and see what we can do for you in that line.

ON Saturday last the price of wheat in London was lower than at any time during the past one hundred years, while on the same day the price in New York City was lower than has been known since the civil war. Where is that "boom" of which some of our contemporaries have been telling us?



ESTABLISHED 1856.

**EUREKA GRAIN CLEANING MACHINERY | GENUINE DUFOUR BOLTING CLOTH****OVER 18,000 MACHINES IN USE.**

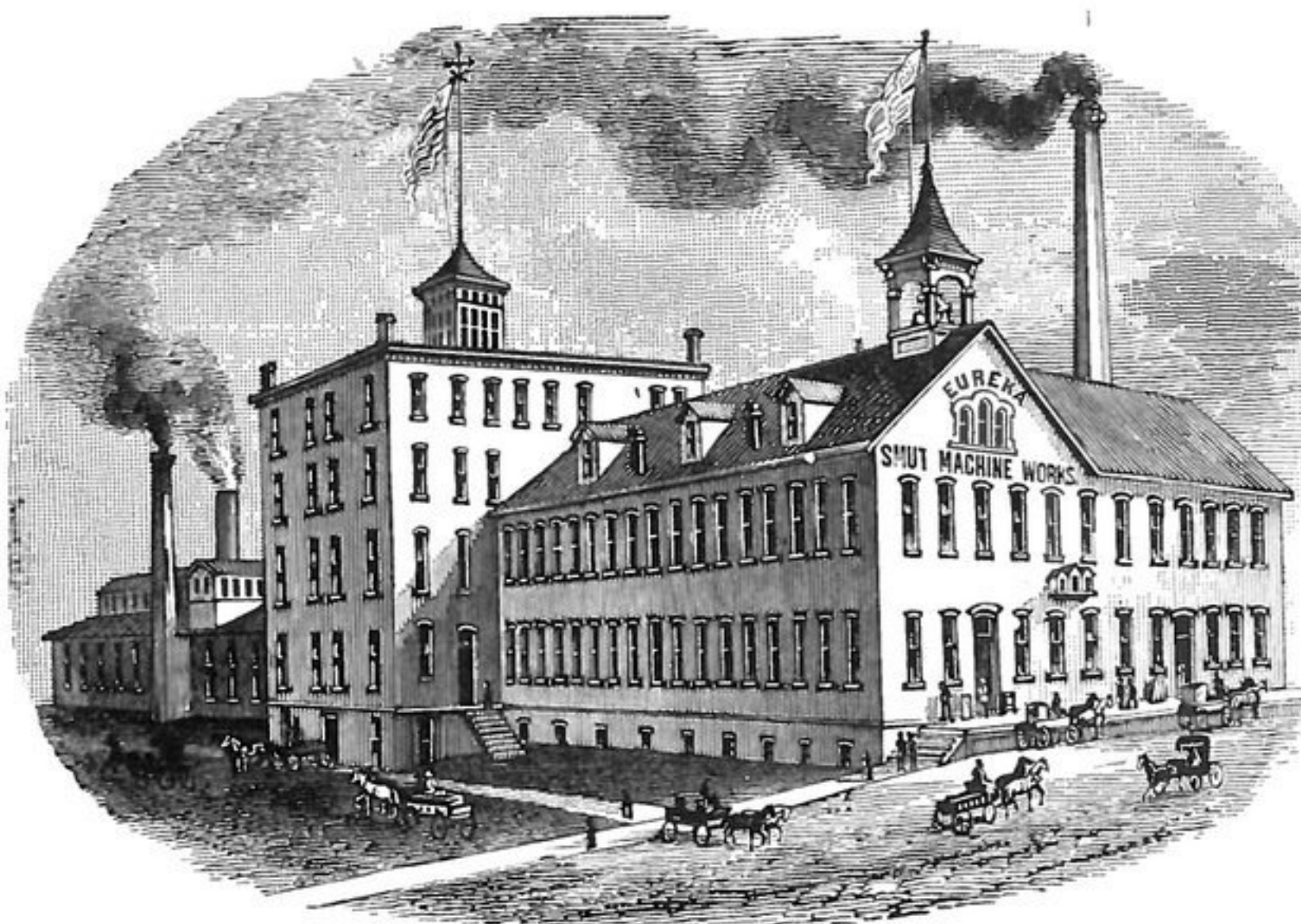
OUR LINE COMPRISES

The Eureka Separator,  
The Eureka Smutter and Separator,  
Eureka Brush Finisher,  
The Eureka Magnetic Automatic Separator,  
Silver Creek Flour Packer.

Our establishment is the oldest, the largest and most perfectly equipped of its class in the world, and our machinery is known and used in every country where wheat is made into flour.

**HOWES & EWELL,**  
SILVER CREEK, N. Y.

European Warehouse and Office: 16 Mark Lane, London, E. C.  
Gen. Agency for Australian Colonies and New Zealand.  
Thos. Tyson, Melbourne, Victoria.



We handle this justly celebrated cloth in large quantities, and can fill all orders upon receipt. For such as may prefer a cheaper grade, we offer our

**ANCHOR BRAND BOLTING CLOTH.**

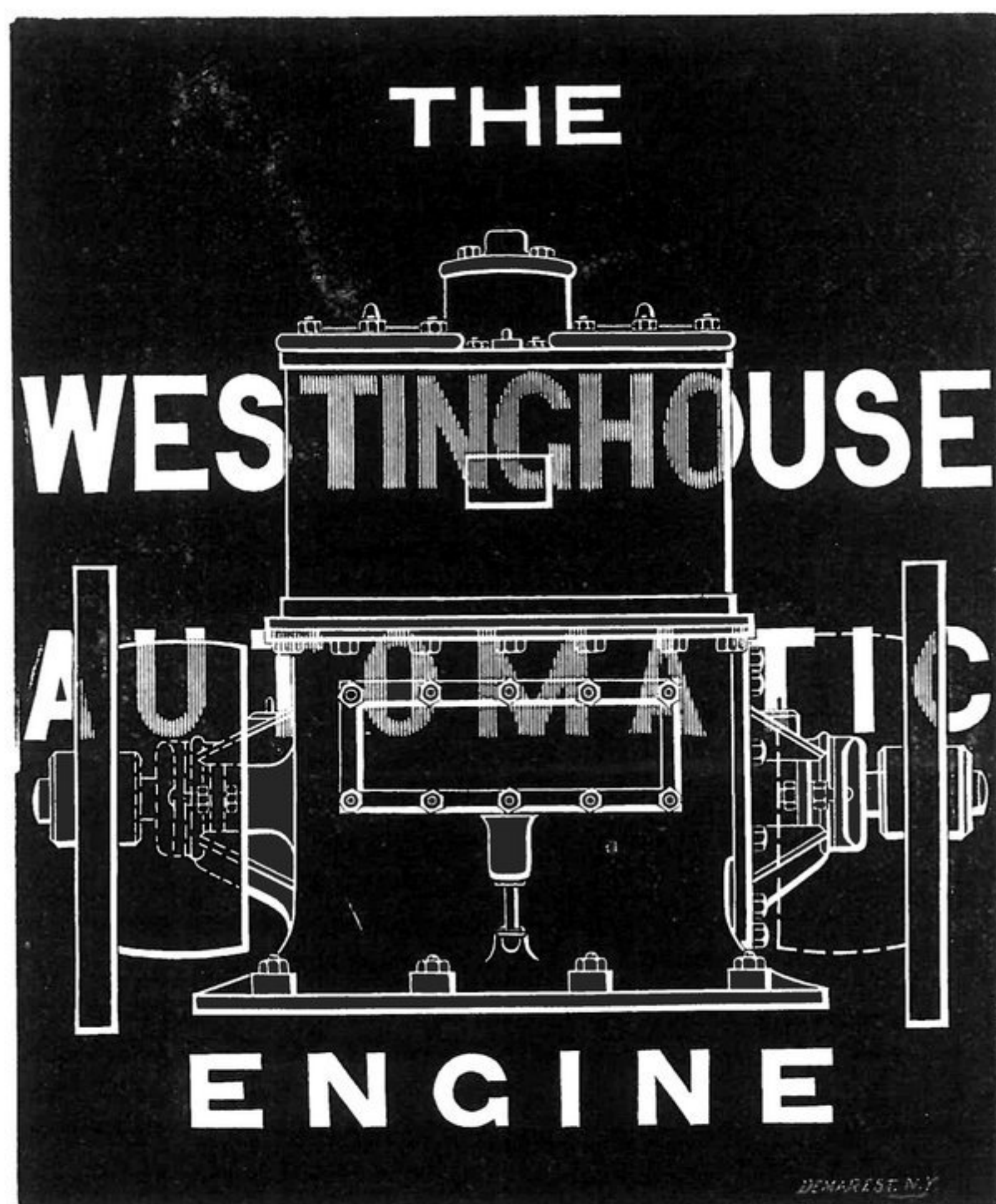
Guaranteeing it to be equal in every particular to any other cloth on the market, except the Dufour. We have handled it for years, have sold thousands of yards of it, and know it will fully sustain our representations.

Send For Samples of Cloth, Our Style of Making Up, and Prices.

**HOWES & EWELL,**  
SILVER CREEK, N. Y.

**4 to 400 HORSE POWER BUCKWHEAT MILLERS**

Unequalled for Regulation and Low Cost of Operation.

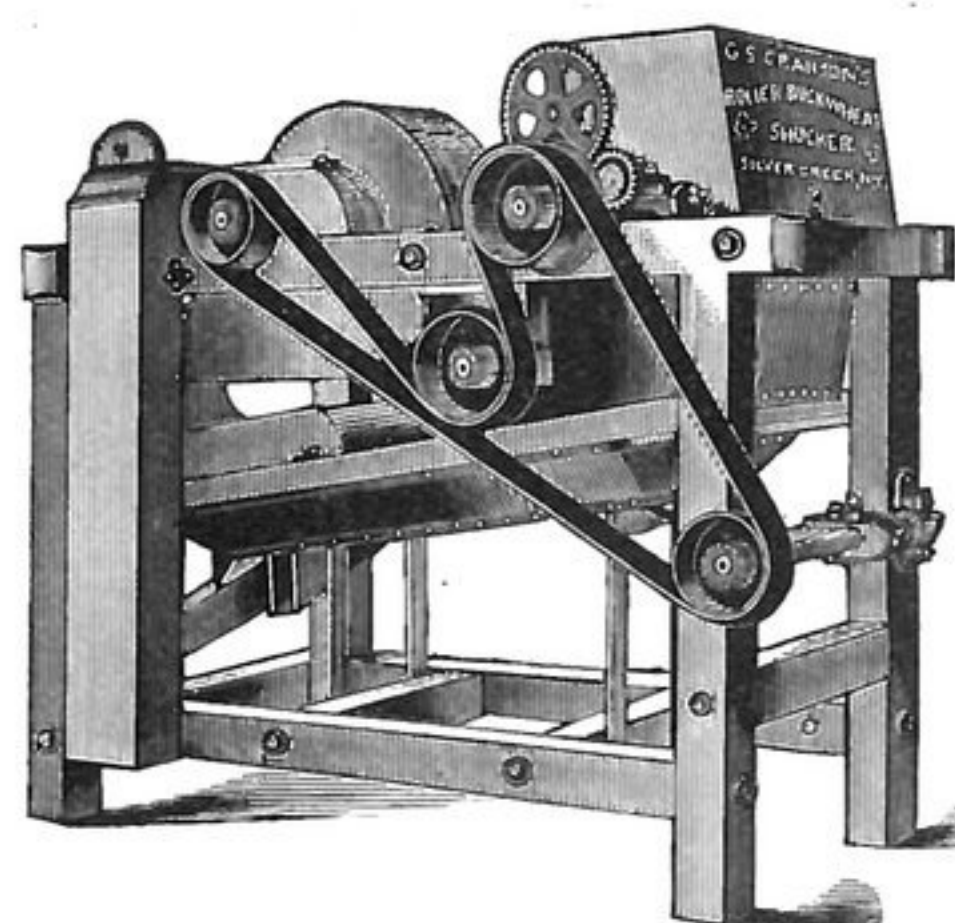


Sales 2,000 Horse Power Per Month.

SEND FOR ILLUSTRATED CIRCULAR AND REFERENCE LIST.

**The Westinghouse Machine Company**  
PITTSBURGH, PA.

**SALES ROOMS:** 94 Liberty Street, New York. 401 College Street, Charlotte, N. C. 401 Elm Street, Dallas, Texas 53 South Market Street, Nashville, Tennessee. Fairbanks, Morse & Co., Chicago, Cleveland, Cincinnati, Louisville and St. Paul. Fairbanks & Co., St. Louis, Indianapolis and Denver.



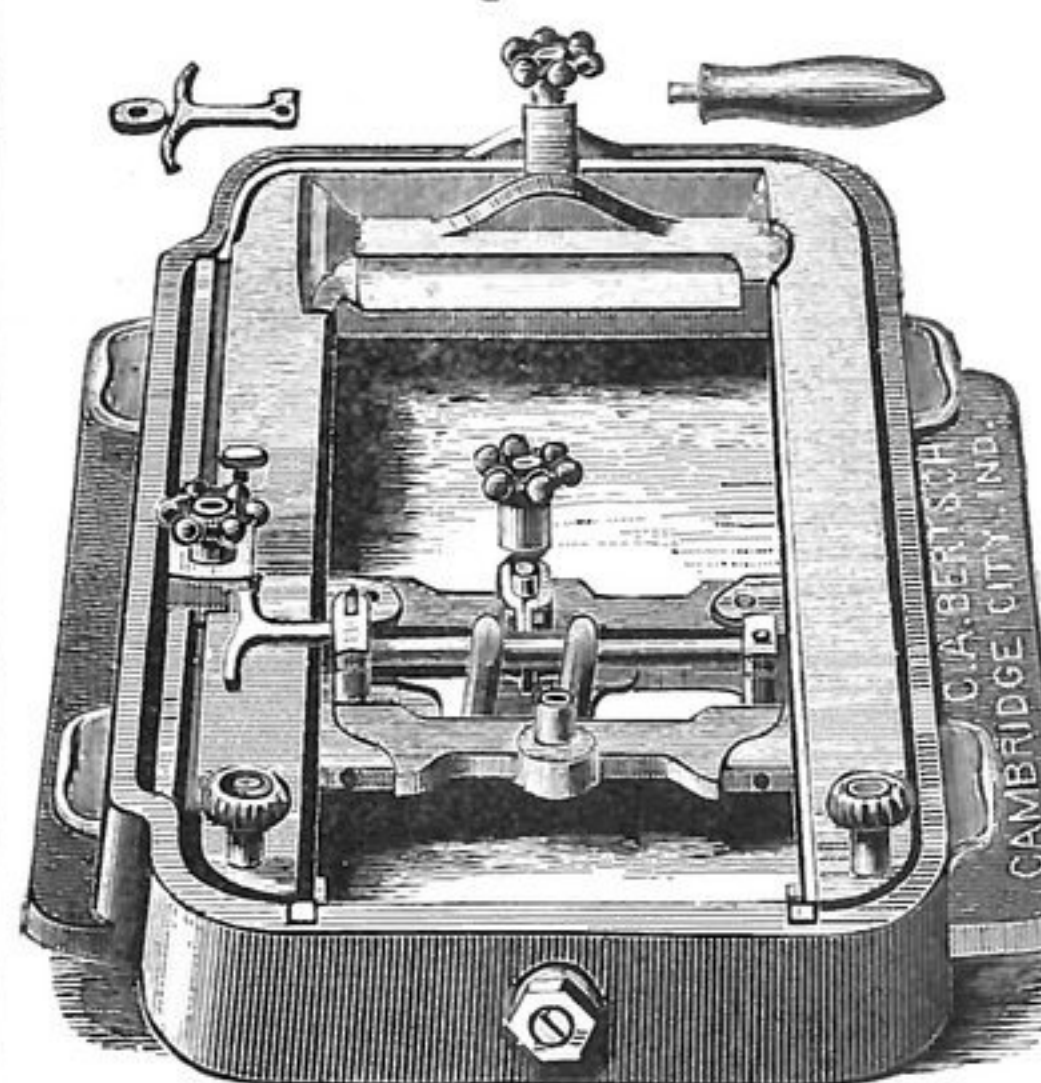
WILL FIND IT TO THEIR DECIDED ADVANTAGE TO INVESTIGATE THE CONCEDED MERITS OF

**CRANSON'S SILVER CREEK ROLLER BUCKWHEAT SHUCKER**

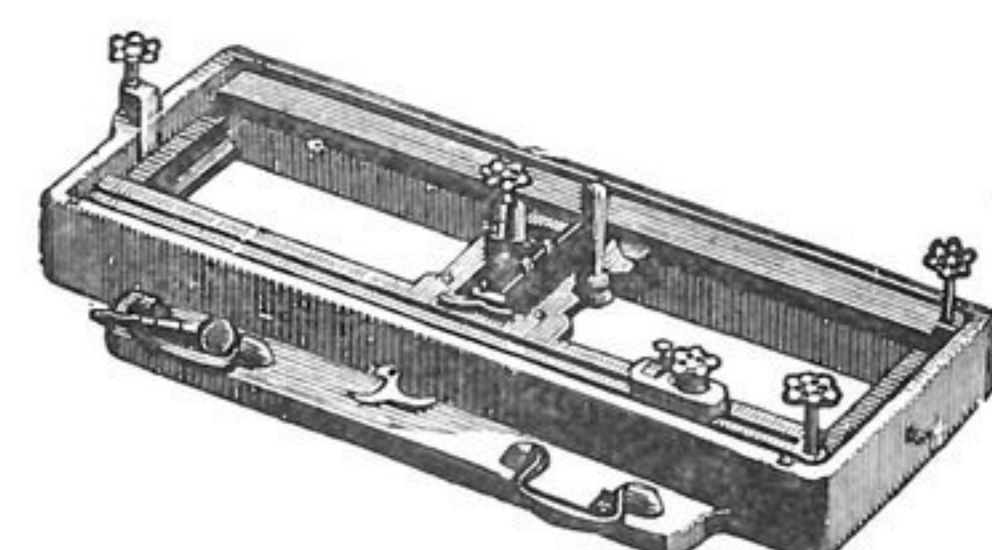
ITS SUCCESS IS BEYOND QUESTION. ITS VALUE HAS BEEN DEMONSTRATED IN MORE THAN 800 CASES. IT IS THE ONLY PERFECT BUCKWHEAT SHUCKER IN THE WORLD.

G. S. CRANSON & SON, SOLE PROPRIETORS SILVER CREEK, N. Y.

**GOVERNORS** { For Water Wheels } Cohoes Iron Foundry and Mch. Co. Send for Catalogue. Cohoes, N. Y.

**TEETOR'S QUICK ADJUSTABLE DIAMOND DRESSER.**

The A Machine. 29 inches long, 18 inches wide. Weight, 140 pounds. Same width carriage as the B machine.



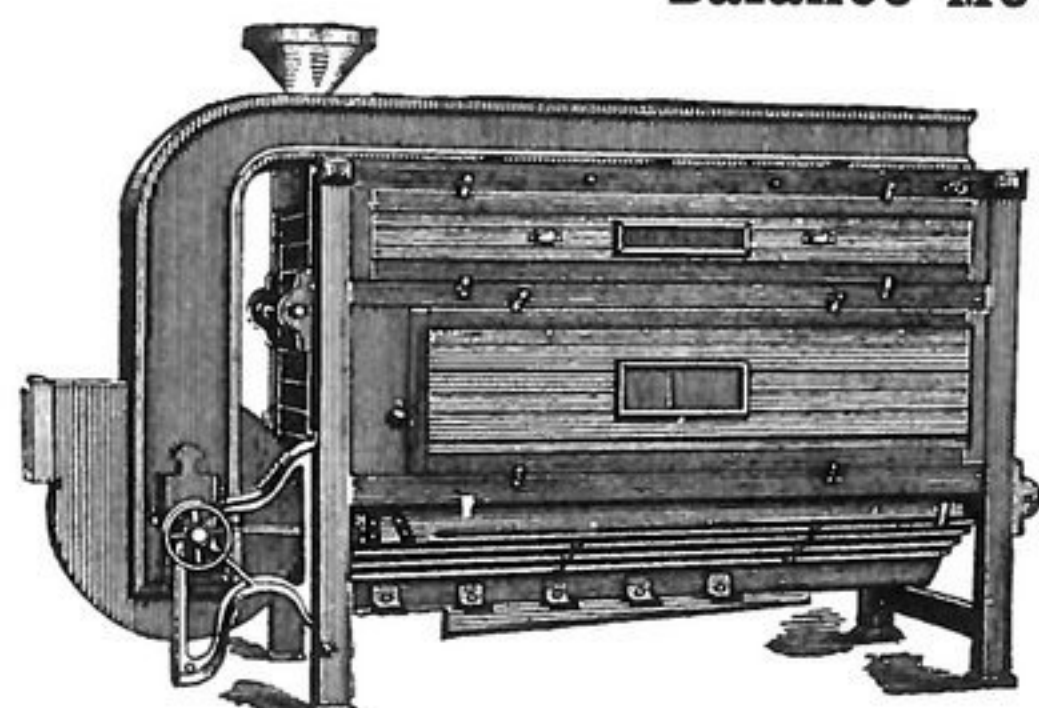
The B Machine. 33 inches long, 19 inches wide. Weight, 165 pounds.

Automatic rod feed. A Revolution. Will cut over 1,000 cuts per inch, right or left, with one or two diamonds for facing. The only Practical feed, especially for deep facing, once going over. No tools required; will Warrant Better Satisfaction, and More Work of all kinds can be done with less trouble than with others. The best of references given. Mechanics are much surprised as to their merit, and say it is "A Revolution." There has never yet been a call for repairs for any one machine. Have been in operation for over four years. Also a Perfect Diamond Holder. See a Machine shown by Thos. Bradford & Co., Exposition, Cincinnati, Ohio. Full descriptive circulars forwarded. Mention this paper.

**C. A. BERTSCH, MANUFR., CAMBRIDGE CITY, IND.**

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The Only Machine with Two Sieves, for Fine and Coarse Middlings. The Only Machine with Balance Motion, Consequently no Jarring or Shaking.



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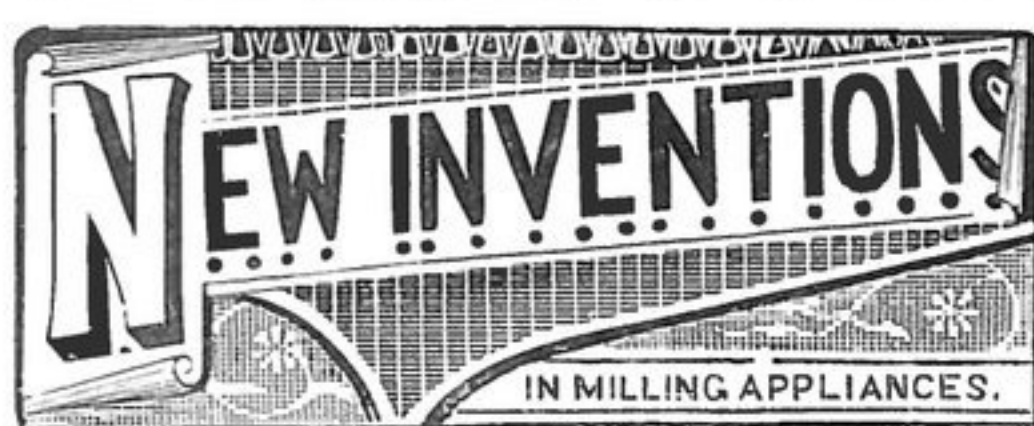
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ON VIEW AT PERMANENT EXHIBITION OF MILL MACHINERY, 36 BROADWAY, NEW YORK.







## CENTRIFUGAL REEL.

Letters Patent No. 306,329, dated October 7, 1884, to Louis B. Fiechter, of Minneapolis, Minnesota. This invention relates to that class of centrifugal reels or flour-dressing machines wherein a horizontal bolting cylinder or reel is combined with a series of longitudinal blades or beaters revolving therein. The object of the invention is to secure the removal of the material adhering to the exterior surface of the reel without subjecting the latter to the rapid wear which results from the use of a continuously-acting brush; and to this end it consists in the combination, with the reel or cylinder, of a stationary brush sustained by journals, one of which is extended through the end of the machine and provided with operating and clamping devices at the outer end, whereby it may be turned to bear with more or less pressure upon the exterior of the reel or turned out of contact therewith. Referring to the accompanying drawings, Figure 1 represents a side elevation, partly in section, of a machine having these improvements embodied therein. Fig. 2 is a vertical cross-section of the same. Fig. 3 is an end elevation of the lever and clamping devices by which the brush is adjusted and secured. A represents the body of the machine, consisting of a strong rectangular frame suitably inclosed to form a case or chamber; B, a horizontal revolving reel mounted within the body, and C the main shaft, extending centrally through the reel and provided with arms or disks carrying a series of longitudinal blades or beaters, D, the outer edges of which travel in close proximity to the inner surface of the reel cylinder. The machine is provided, as usual, with a feed-spout, E, through which the material is delivered into interior of reel, this spout being located, in this instance, at one end, although in double machines it may be located at the center, if preferred. The foregoing parts may be constructed, arranged, and driven in the ordinary manner. In applying the improvement to the brush for keeping the bolting surface clear it will be seen, on reference to Figs. 1, 2, and 3, that the brush J, extending lengthwise of the machine, is sustained at its ends by means of journals or trunnions *a*, sustained in fixed bearings, one of the journals being projected on the outside of the machine and provided with a hand-lever, K, by means of which the brush may be turned in such position as to throw its bristles out of contact with the bolting-cloth, or against the same with such degree of pressure as may be required. The lever K is provided with a thumb-screw, L, passing through a slotted fixed plate, M, by means of which the lever and brush may be locked in the position required, stationary adjustable brushes have been combined with bolting-reels in various forms and under various arrangements, and also rotary brushes have been employed in a like combination, but the arrangement represented in the drawings for giving support to the brush is advantageous because of its simplicity and of the fact that no openings are afforded for the escape of the dust or flour from the interior.

## AUTOMATIC FEEDING DEVICE FOR ROLLER-MILLS.

Letters Patent No. 306,365, dated October 7, 1884, to Monroe B. Titlow, of Treichler, assignor of one-half to Augustus Wolf and David L. Hamaker, both of Allentown, Pa. The object of this invention is to construct an automatic feed-regulator of such a character that it can be readily applied to the hoppers of roller-mills as now constructed.

Figure 1 is a transverse section of sufficient of a roller-mill hopper and casing to illustrate the invention; and Fig. 2, a longitudinal section on the line 1 2, Fig. 1, some of the parts being shown in elevation. A is the casing of the mill; B, the hopper; D, the usual feed-roll, and F the valve, which, in conjunction with the roll D, serves to regulate the feed of the grain from the hopper to the rollers in the casing A. This valve F is suspended by rods *a a'* from levers G G', hung by pins *b* to a box, H, secured to the outside of the hopper-casing, the rods being acted upon by springs *d*, hung to pins *e* on the box, and the tension of these springs being regulated by the adjustment of nuts *f*, guided by lugs *g* on the box, and adapted to the threaded portions of the screw-stems *h*, which have collars *i*, whereby they are vertically confined to bearings in the top of the box, so that by turning the stems the nuts will be raised or lowered. Each lever has formed in it a slot, *m*, and to these slots is adapted the short arm of a lever, J, which is pivoted to a block, *n*, in-

A by an ordinary mill-hand without the aid of a carpenter, the only cutting of the casing which is necessary being the formation of the opening *p* for the lever J and the openings *q* for the rods *a a'*. The valve F is not radially in line with the center of the feed-roll D, but is a little on one side of the center of the roll, as shown in Fig. 1, this location making it possible to feed coarse grain with greater facility than when the valve is directly in line radially with the center of the feed-roll.

## THE FLOW OF WATER THROUGH TURBINES.

On the question of conducting water through a turbine, and its reactive effect, much has been said by practical and theoretical writers, with the understanding that a stream of water must enter the buckets of a turbine without shock and leave them without velocity. In a paper by Arthur Riggs, president of the Society of Engineers, London, read before the British Association, at Montreal, it is stated that these assumed

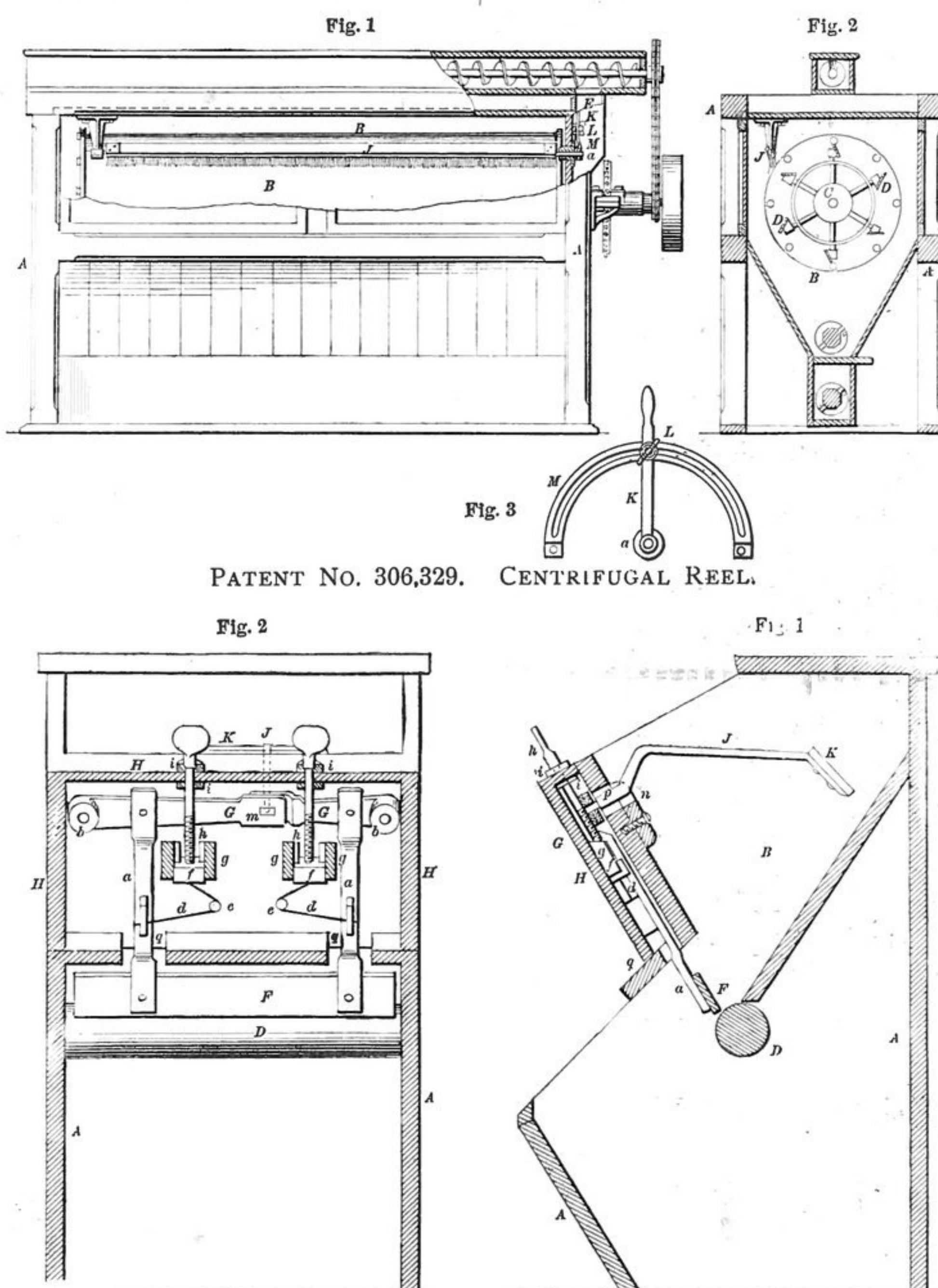
action somewhat disguised, and only to a limited extent. In analyzing the principles of the turbine, impact is considered a pressure due to the retarding of the velocity in a perpendicular direction to the plain surface on which it acts, while reaction forms a vertical stream, which is the summation of all the horizontal elements on every portion of the concave surface on which the stream is caused to flow. In most theoretical investigations it is assumed that impact and reaction are equal, especially when a current is diverted at right angles to its original course. This condition would imply that the greatest result would be obtained from a screw propeller when the blades stand at forty-five degrees with its plane of rotation, but in practice an angle of forty-seven degrees is found best, owing to the reason that impact and reaction under these conditions are not equal.

From experiments performed by Mr. Riggs with streams of water driven through a bent tube forming an angle of forty-five degrees, and having a smooth bore that conforms to the conditions of the screw propeller, it was determined that the greatest force obtained from the impact of the stream and its reaction as it passed into one branch of the pipe and out of the other, was when the receiving length made an angle of forty-eight degrees, with a plane upon which the bent tube rested, leaving forty-one degrees for the angle formed by the delivery of this experiment, or in the proportion of seventy-one to sixty-two. This proportion would give an inclination for the blade of a screw propeller, with its plane of rotation, an angle of forty-one degrees. In experiments, with stream diverted at right angles, the resultant due to these proportions is found to be ninety four units, whereas, if impact had been the same as reaction, one hundred units would have been obtained, as this is the total amount that can be aimed for in designing a screw propeller, or for a turbine that is to be opened by the impact of a stream that is merely turned through a right angle from its original course; but when a turn of one hundred and eighty degrees is made, there is still further reduction found in reaction, and as this, together with the impact from the stream, act vertically downward, we have their sum and not merely their resultant, that is to constitute the total pressure obtained from a jet of water.

Taking the standard units employed in the experiments described, the sum of the forces from both impact and reaction is found to be one hundred and twenty-six units, of which seventy-one represent impact and fifty-five the effect of complete reaction obtained from delicate weight on compound scales. The author concludes that in designing a turbine or screw propeller it would seem desirable to change the direction of a stream, as far as possible, into one at one hundred and eighty degrees, to its original course, for it may be said that in carrying out this view it has placed the modern scientific designed turbine in that pre-eminent position it now holds among all hydraulic motors.—Ex.

"SUPPOSE," said an examiner to a student in engineering, "you had built an engine yourself, performed every part of the work without assistance, and knew that it was in complete order, but when put on the road the pump would not draw water, what would you do?" "I should look into the tank and ascertain if there was any water to draw," replied the student.

**WILHELM & BONNER,**  
**Solicitors of Patents,**  
*Attorneys and Counselors in*  
*Patent Causes.*  
No. 284 Main St., Buffalo, N. Y.



PATENT NO. 306,329. CENTRIFUGAL REEL.

PATENT NO. 306,365. AUTOMATIC FEEDING DEVICE FOR ROLLER MILLS.

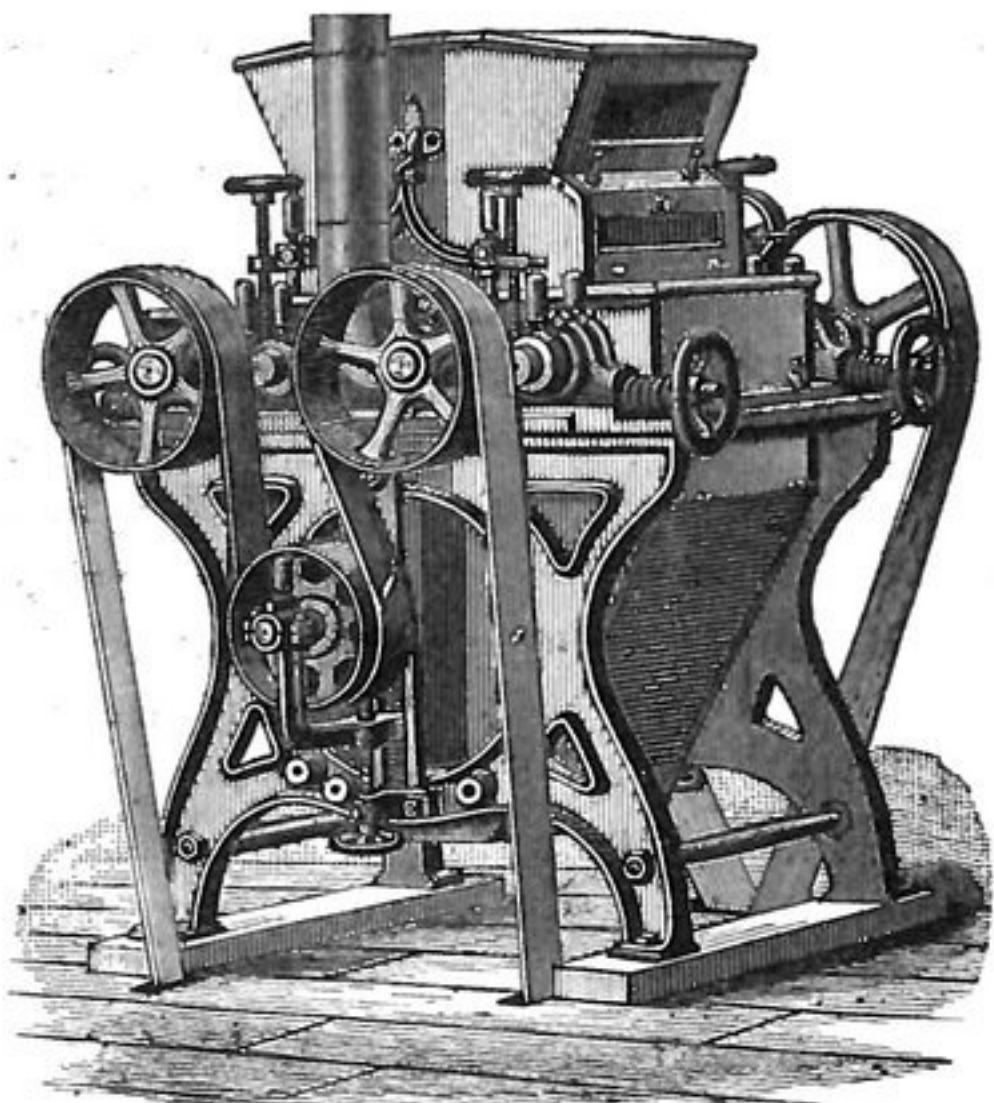
side of the hopper, said short arm of the lever projecting through an opening, *p*, in the hopper-casing, and the long arm of the lever extending into the hopper, and being furnished with a float, K. This float rests upon the mass of grain in the hopper, and as the level of the grain falls the levers G G' will be operated so as to raise the valve F to an extent proportionate to the decreased pressure of grain thereupon, a uniform feed being thus automatically maintained. The lever G' is shorter than the lever G, so that the lever J may be placed at one side of the center of the hopper, and thus not interfere with the usual automatic shut-off mechanism with which the valves of most roller-mills are provided, and which is arranged centrally in the hopper. The rods *a a'* are so connected to the levers in respect to the fulcrums of the latter, however, that the lift of the valve will be uniform. All of the regulating devices, with the exception of the lever J, are carried by the box H, which can be readily secured in position on the casing

conditions are misleading, as it is a well known fact that in the best of turbines both are carefully disobeyed, and in spite of all of the theoretical curves and delicate forms that can be given to the floats, they are of no consequence whatever, or how the water leads through the buckets of any turbine, so long as its velocity gradually becomes reduced to the smallest amount that will carry it freely clear of the machine. The action of the screw propeller is represented as a parallel case, although in one the water imparts motion to the buckets of a turbine, while the screw imparts a spiral movement to a column of water driven aft from the vessel it is to propel forward.

Although turbines have been driven by impact alone, and sometimes entirely by reaction, a combination of them both is generally adopted, although it is by the reaction of the liquid that the best results are known to be obtained. The paddle wheel of a steamer impels a mass of water backward by impact, but the screw propeller uses re-



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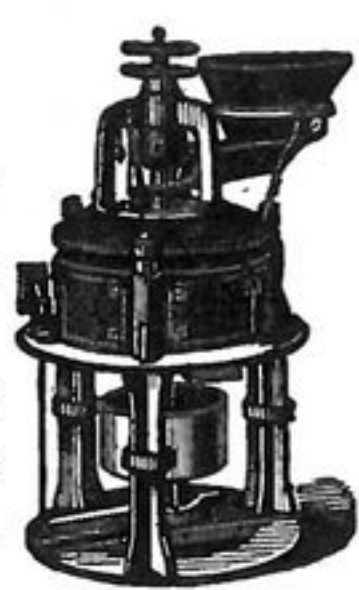
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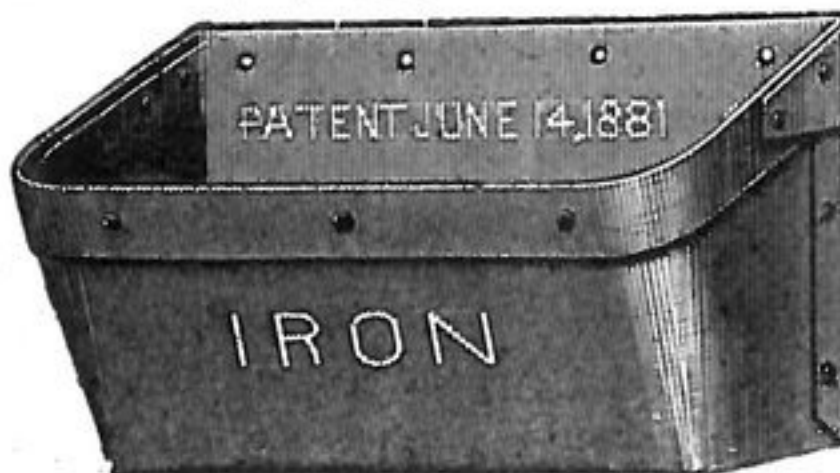
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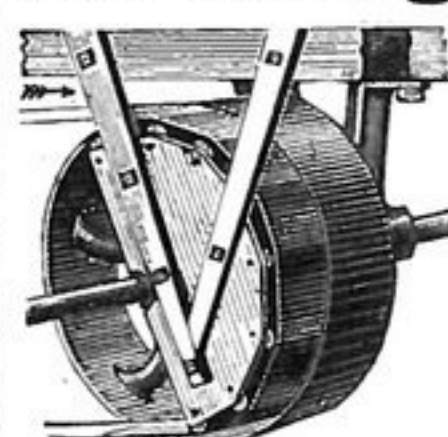
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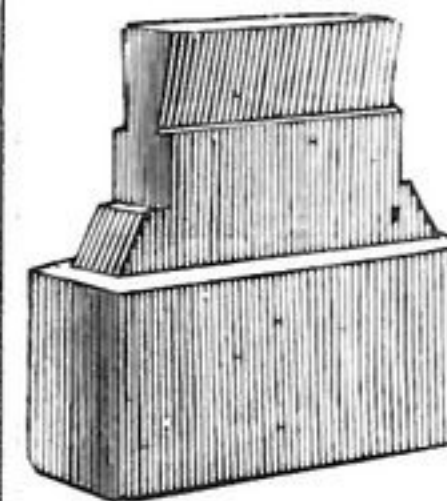
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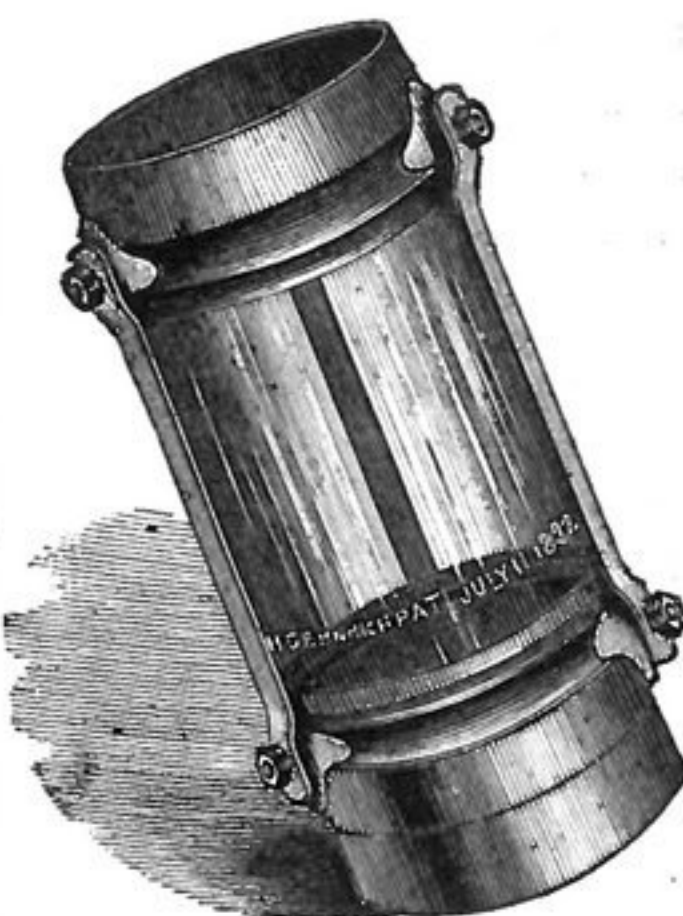
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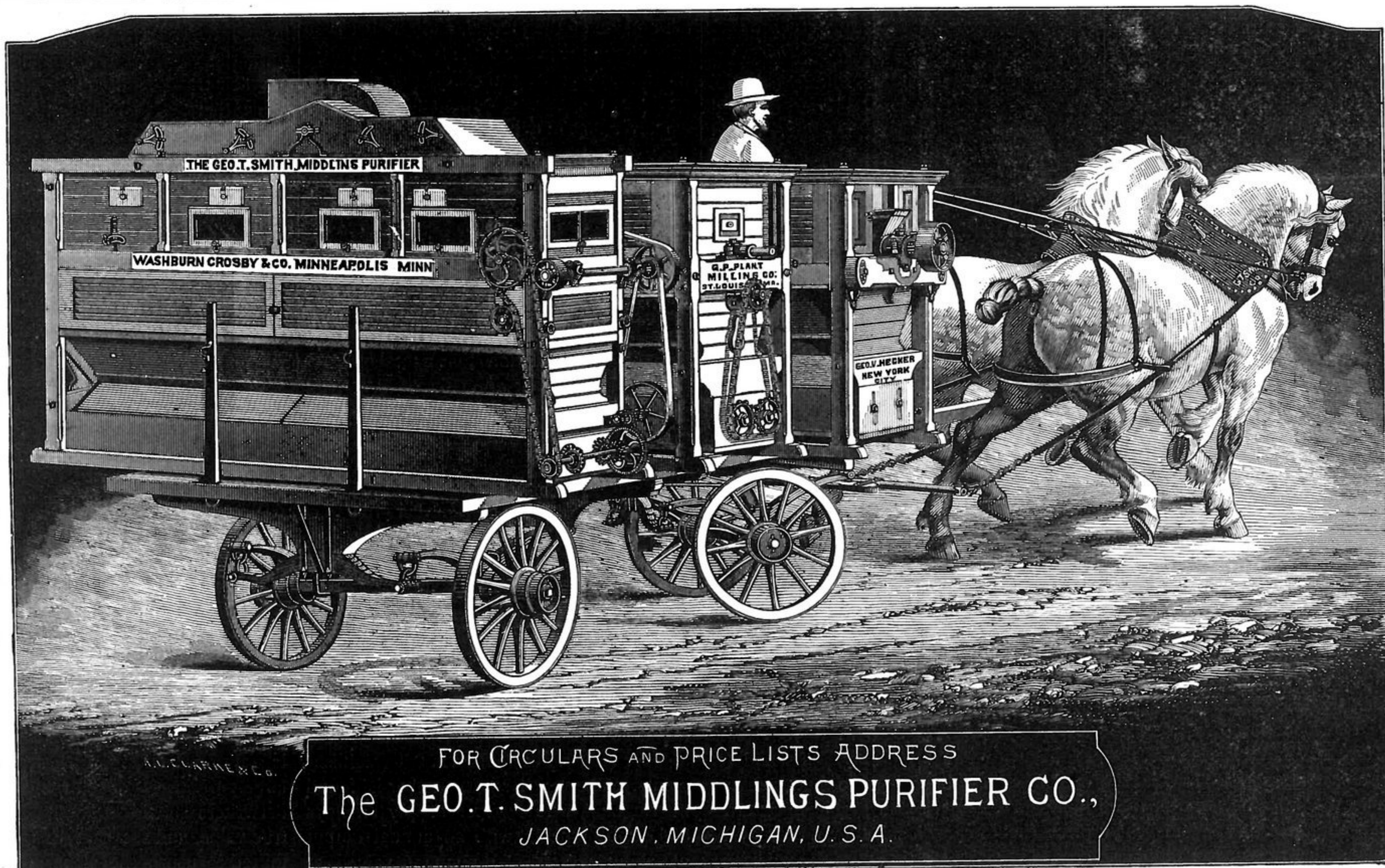
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### TURBINE WHEELS VS. DIRECT ENGINES.

A WRITER in the Industrial World says, one serious objection to the use of a turbine wheel which has been more fully realized since direct high-speed engines have become so common, is the need of gearing of some kind either for the change of speed or the direction of the motion. This has been supposed to be an absolute need, so far as the change of direction is concerned, for it is quite a rare thing to see a quarter-twist belt used for the transfer of a first motion from a vertical shaft of a water wheel. Even though this type of belt connection is open to some objection, it may very safely be said that the loss of effect due to the use of medium or heavy gearing at high speed is far more worthy of consideration, and when the gears have been partly worn or have fallen out of adjustment it becomes a palpable and serious loss.

The step from the slow overshot wheel to the fast-moving turbine was an important one, but those who by actual trial have become familiar with the high-speed engine recognize the fact that the step from the use of the turbine to that of the engine, is one of even greater importance and real money value when the permanence or regularity of the water supply becomes in the least impaired.

There are too many men by far in the mills who cling with a sort of affection to their heavy mitre gearing or to some massive mortise wheel which perhaps they helped to make a score of years before, or in the skillful repair of which from time to time they have helped. These men, though patterns of faithfulness, do not all understand the possibility, and still less the necessity, which sometimes exist for economy's sake, of abandoning entirely and for ever these earlier geared connections however useful they may have been in their prime. An insignificant engine, even though for its size it may be massive enough, finds too little favor with the men or "millwrights" of the older school as compared with the heavy appliances with which they have been so long familiar. It is not an easy thing to apprehend fully the extreme sensitiveness to its varying load of one of these engines of a first-rate type, but it exists nevertheless, and with the gradual but constant decline of the water privileges in all parts of the country, this quality in an engine is almost above every other, the hope and stay of the manufacturer for the permanence of his operations.

The question which must next occupy the thought of the builder of mills in general, is the entire possibility, and indeed the necessity for best results, of connecting the engine direct to the main shaft of the mill without the intervention of any belt whatever. Many have already done this, to their profound satisfaction, but there are too many by far still waiting or even denying, because they have not seen it, that such a thing can be done.

### LEVELING AND LINING SHAFTS.

With the best of care, the main line of shafting and the intermediates and counters will sometimes get "out of kelter," from several causes. It is difficult to make a building perfectly secure in its foundations and superstructure; the walls settle, the foundations may be affected by frosts and by profuse rains, the floors become unlevel; the main shaft is unduly loaded and unevenly pulled by newly added machinery; oil holes become clogged, and other small causes

may combine to disturb the relations of prime mover, main shaft, and the other lines that are intermediate between main shaft and machines.

It will not pay to go over the entire work of hanging the shafting as originally done, so some data should be established at that initial period to rectify by, when minor changes occur. It is a very good plan, therefore, after lining out, or squaring out from the prime mover to the main shaft, to keep the lines. In practice the writer has found that the brass nails, convex-headed, which are used for ornamental furniture purposes are good, or copper tacks, either of them being driven into the floor at convenient distances to designate the exact lines, the lines having been originally found by the plumb bob. One word as to this implement; as usually made, it is not a tool of precision; a pear-shaped pointed weight can rarely be suspended by a central string so that the point will touch a point at all times, and not describe a minute circle. A plumb bob should be a circular weight like a solid ring suspended horizontally by three lines, like an old-fashioned balance, meeting in one, and have a projecting downward center. Some toy tops show the proper shape for a plumb bob.

If these brass-headed or copper-headed marks have not been left on the floor from the original lining of the shafting, they should be made subsequently, taking, by square, the central line of the engine as a basis. This square having been established, plumb from the center of one end of the shaft or from one side of the shaft, and then at intervals to the other end. By drawing a connecting chalk line on the floor a determination of an absolute line may be made by squaring to the engine. Of course, when the main shaft is lined all the other shafts may be brought parallel with it by means of rigid reachers, as light wood staffs, or flexible ones, as linen tape lines. But for all lining purposes the writer never found anything better than the ordinary fishing line of flax, of the size suitable for fresh water perch or pickerel fishing. It keeps its length under quite considerable hygrometric changes of the atmosphere, and one hundred feet of it may be conveniently carried in the pocket. All this relates to the lining of the shafts; now as to the leveling, which is of fully as much importance.

A shaft may be in line with the prime mover and in relative line with the intermediates, and not be right. It may be, also, perfectly straight, so that a line stretched from end to end through the boxes would show no deflection, and not yet be right. The shaft should be level; and then, if the pull on it is evenly balanced, or nearly so, there will be no "creeping," even if there are neither coupling hubs nor stay collars set up against the ends of the boxes to prevent end movement. It is possible (because it has been done) to run a line of two and three-quarter inch shafting 220 feet without a turned journal or a guard collar in its entire length; but to do it the shaft must be level.

A handy implement for leveling the shaft can be made in any carpenter's or pattern-maker's shop. It is a frame, well braced, made of light wood, pine or spruce, consisting of two upright arms of a length sufficient to reach from the shaft to the operators shoulder. These have at the upper end a cross piece secured at a right angle, or an angle somewhat more acute, so that the elbow thus formed would embrace or rest on the shaft. These uprights are connected by cross bars at a convenient distance for handling the uprights and for reaching between pulleys, so that each upright can rest on the shaft. The lower cross piece should carry a spirit level, or may be carried separately to use with the appliance. It is evident that the frame must be strongly

braced to prevent any "withing," or sagging, and that the lower, or spirit level, bar must be at an absolute and exact distance from the forked ends of the upright. In use, the shaft to be tested must be at rest.

With this simple implement the exact level of a shaft may be found, or rather any deviation from the level may be ascertained. A combined level and plumb, such as is used by carpenters and masons, can be used to determine the accuracy of the implement. It is handy to have in the shop.—Sci. Am.

### A THEORY OF LUBRICATION.

Walter R. Brown, an English investigator of some note, writes to the "Engineer" as follows: Certain theoretical conclusions as to the nature of friction in the case of lubricated surfaces may perhaps be deduced. We may assume that the surface of the journal and bearing are divided from each other by a film of oil sufficiently thick to prevent their coming in contact; that this film is divided into two rings, one adhering to the moving journal, the other to the stationary bearing, and that the resistances, here called by the name of friction, are really those which occur at the bounding surface where these two rings meet each other. This is, in fact, a conclusion to which engineers have generally come from practical experience; and it is confirmed by a curious fact which occurred in the course of Mr. Tower's experiments. It was found that when a small hole was drilled down from above, through the brass bearing on which the load rested, the oil rose in this hole, and could not be kept from doing so, except by the application of a very great pressure—more than 200 pounds per square inch in that particular case. This proves the existence at the point of greatest pressure between journal and bearing, of a film of oil capable of sustaining that pressure, and of being slowly squeezed out by it where an opening presented itself. It is clear that this film can not be wholly at rest, but must be recruited from the oil bath below through the action of the rotating journal; otherwise the film would almost immediately have been squeezed out, and thus the whole of the journal would have become dry and would have seized. We are therefore justified in assuming that there is, in the case of a completely lubricated journal, such as we are considering, a film of oil adhering to the outside of the journal, and another film adhering to the inside of the bearing. These two films are constantly sliding or shearing one past the other at the surface speed, whatever that may be, of the journal.

### THE PRODUCTION OF PAPER.

A good deal has been said about the quantity of paper consumed by any country as a test of the education of its people, and official statistics carefully collected about the total production of paper may be of interest in this connection. Thus we find from recent publications that a total of 3,985 paper mills turn out annually 2,100,000,000 pounds of paper. About one-half of this enormous quantity is used for printing purposes, and the consumption of the journals alone is estimated at about 660,000,000 pounds. During the last ten years this consumption by the journals has increased about one-third. Government administrations consume annually about 220,000,000 pounds; schools, 200,000,000; commerce, 268,000,000; trade 200,000,000; private correspondence uses about 115,000,000 pounds annually.

The United States produce and consume the largest quantity of paper, and represent a paper industry carried on in 900 establishments. The next largest number is found in England, whose paper supply employs 800 establishments, with an annual output of about 400,000,000 pounds, valued at nearly \$50,000,000. The third place is

given to France: According to the figures of a recent statistician, each Russian uses annually one pound of paper, each Spaniard 1½; each Italian or Austrian, 3½; each Frenchman 7½; each German 8; each Englishman 10¼, and each American 11½ pounds of paper in a year. Of course, these figures are somewhat misleading. Any foreigner who visits the United States during election time, or any one who can coolly review the large amount of paper necessary for our high art advertising and show printing, will understand why America should lead the world in paper consumption.

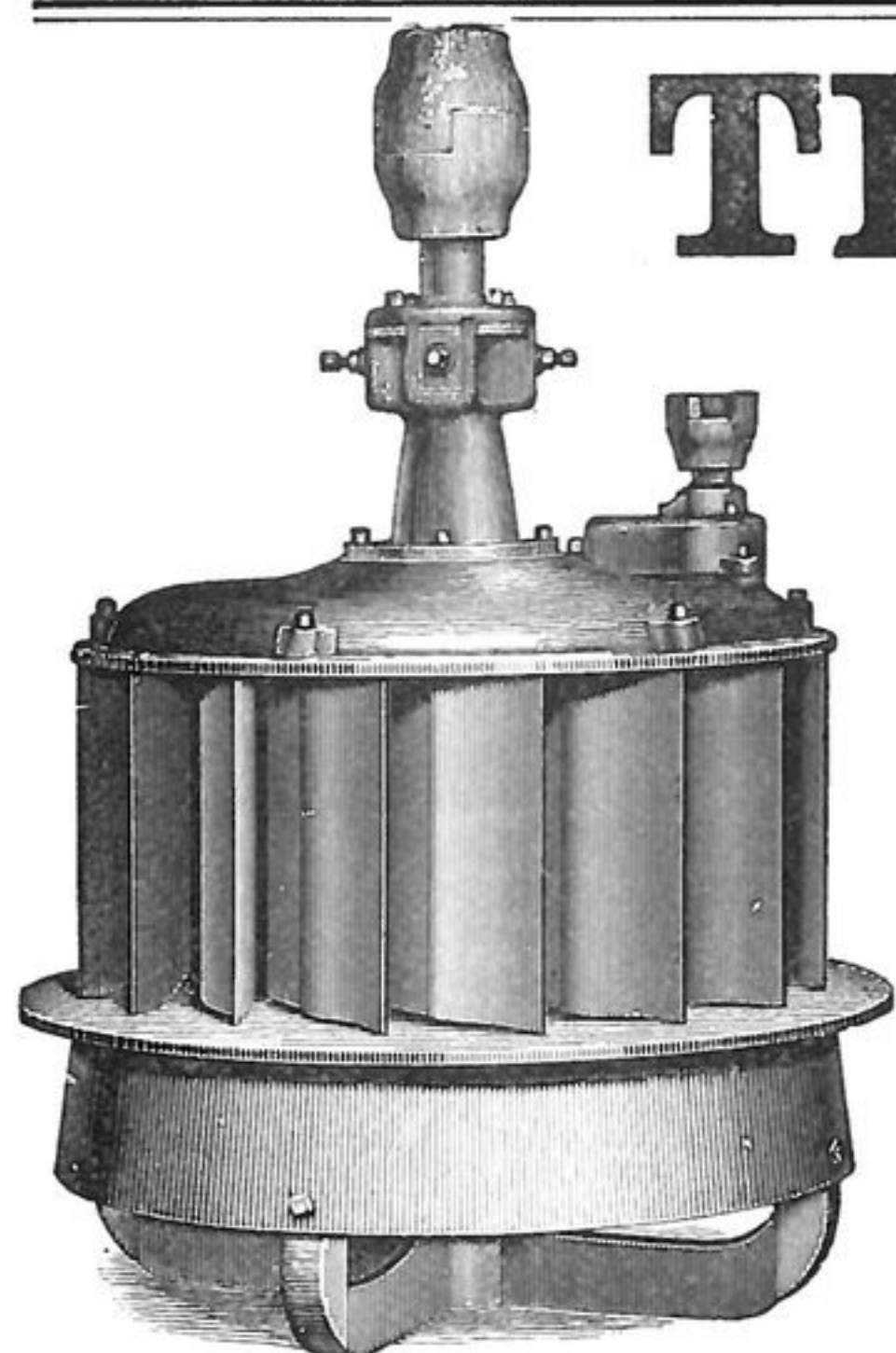
\* \* A little apparatus by which a dwelling house or office may be kept at a uniform temperature is noticeable, not by reason of novelty, which it doesn't possess, but because of recent improvements which render it fairly reliable. Those who have ever tried to regulate a furnace fire are aware how much time it requires and how unsatisfactory are the results. The house being too warm, the dampers are adjusted and the windows opened. As a result, the temperature, which before was nearly tropical, falls too low for comfort. The electric regulator is intended to look after the furnace fire, or rather its temperature, and by preventing it from becoming too hot, effects a not inconsiderable saving of fuel. It consists of a thermostat, a clock, an electric jar, and a valve. The thermostat is hung up in any of the living rooms; the clockwork and valve being placed on a branch of the smoke-pipe of the furnace. When the instrument is properly set at a certain temperature, the draught will be checked when the heat rises above it, and opened again when it descends below it. It is exceedingly sensitive and does not easily get out of order.

\* \* The Government of Chili has decided to hold a permanent exhibition of American manufactures and machinery, at Santiago, we are told by "Iron." A circular has been issued, stating that the Government will conveniently arrange a part of the National Exhibition Building at Santiago, in order that American manufacturers may exhibit their productions. All goods thus sent are admitted free of duties at the custom house in Valparaiso, and become the property of the Government from the time their invoices and bills of lading are delivered to the consul. The Government pays the expenses for landing goods, and for their transportation as well as their care while there. No definite time or duration for the exhibition has been fixed, and the Government reserves the right to close the exhibition after due notice of two years shall be given.

\* \* Professor de Chaumont says, with regard to disinfectants, that there is but one true disinfectant—viz., fire. The majority of so-called disinfectants are simply deodorants. The idea that tobacco smoke or the odor of camp is destructive of contagion is still extensively held, though it is simply absurd. A true disinfectant is a substance that will kill the germ or living particle in which the contagious principle resides, or through which it is conveyed. Of true disinfectants, heat is the most reliable, though others are not to be despised, such as carbolic acid, chlorine and sulphuric gas.

\* \* The "Spectator" has no exalted opinion of the hand grenades for fire extinguishment. It closes an article condemning them in this way: "One ordinary chemical extinguisher will do more actual service than a barrel of grenades. As these are being sold largely to owners of mills and factories, underwriters should know something of their true value, and see that they are not permitted to usurp the place of practical fire extinguishing appliances."





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Possesses more than Double the Capacity of other Water Wheels of same diameter, and has produced the Best Results on Record, as Shown in the Following Tests at Holyoke Testing Flume:

Size Wheel.	Head in Ft.	Horse Power.	Per Cent Useful Effect
15-inch.	18.06	30.17	.8932
17 1/2 in.	17.96	36.35	.8930
20-inch.	18.21	49.00	.8532
25-inch.	17.90	68.62	.8584
30-inch.	11.65	52.54	.8676

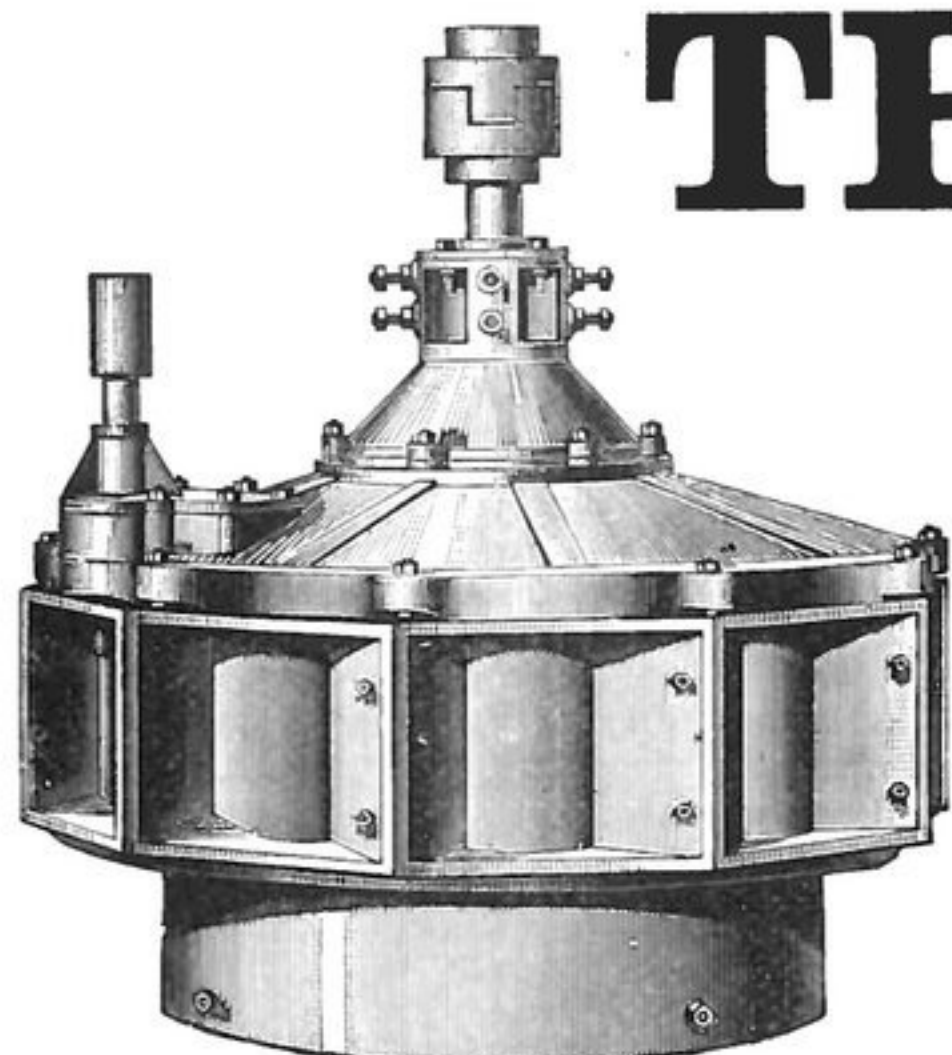
WITH PROPORTIONATELY HIGH EFFICIENCY AT PART-GATE.

Such results, together with its nicely-working gate, and simple, strong and durable construction, should favorably commend it to the attention of ALL discriminating purchasers. These Wheels are of very Superior Workmanship and Finish, and of the Best Material. We also continue to manufacture and sell at very low prices the

## ECLIPSE DOUBLE TURBINE,

So long and favorably known. State your requirements, and send for Catalogue to the

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Celebrated as the Best Part-Gate Wheel Ever Built.

Absolutely Unequalled in Efficiency, as Shown by The Accompanying Table.

WE PUBLISH OUR PART-GATE FIGURES.

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No Other Turbine Ever Approached the Above Percentages at Part-Gate. For Catalogue and Information Address,

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# LEFFEL'S WATER WHEEL

MADE BY JAMES LEFFEL & CO.

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**MOST PERFECT TURBINE**  
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Comprising the Largest and the Smallest Wheels, under both the Highest and Lowest Heads used in this Country. Our new Illustrated Book sent free to those owning water power.

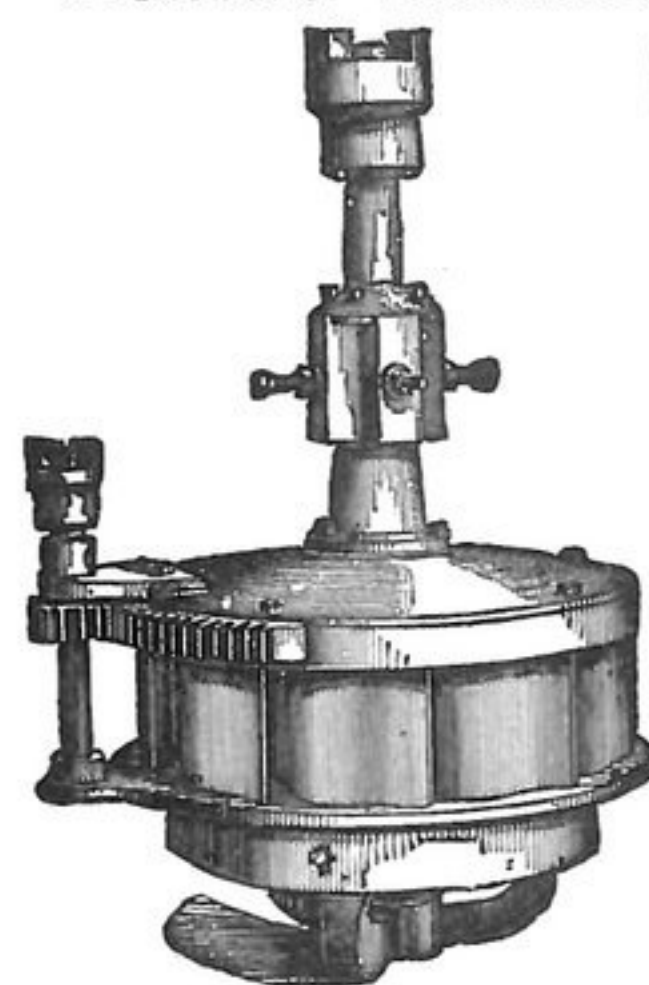
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EASILY  
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RAPIDLY.  
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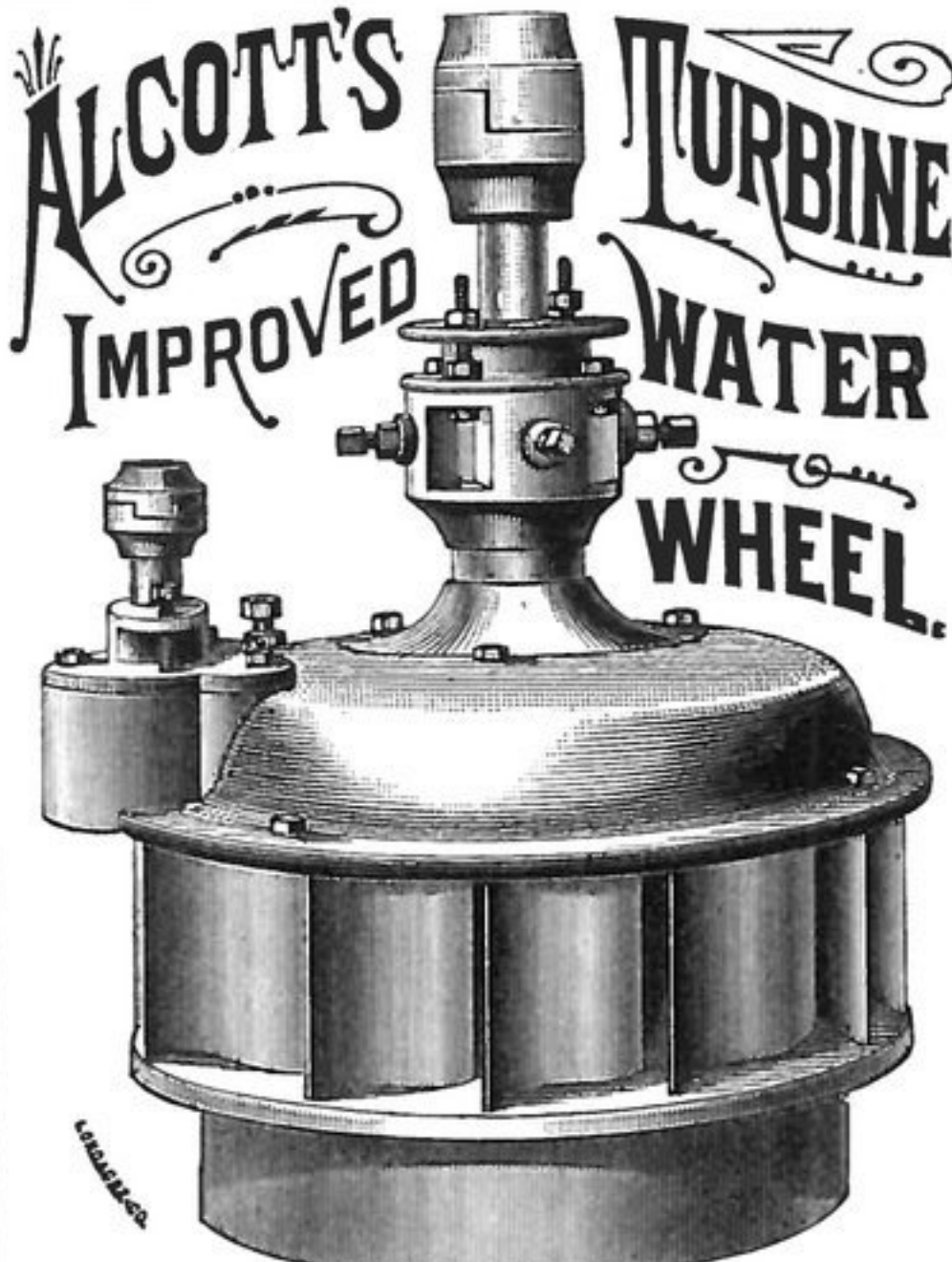
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### Improved Success Percentage.

Full Gate.....	86.29
3/4 Gate.....	86.07
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This Wheel is Durable and Cheap.

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This Wheel gives high results, and is acknowledged the best, most practical and efficient Turbine made. For Simplicity, Durability, and Tightness of Gate it has no equal.

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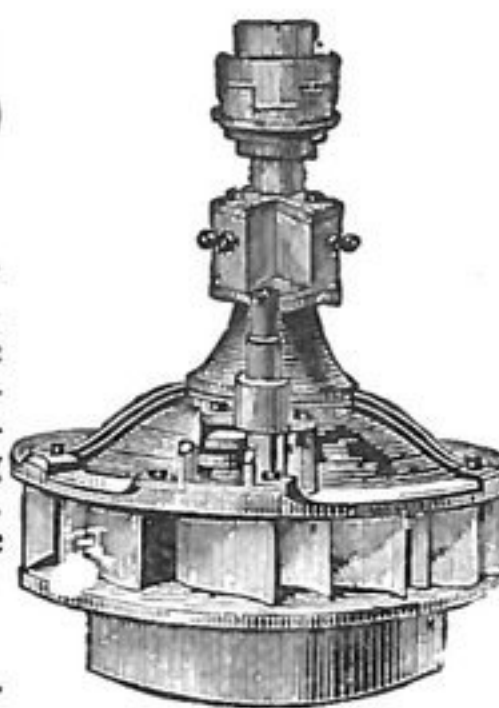
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Standard Turbine

IS THE Best constructed and finished, gives better Percentage, more Power, and is sold for less money, per horse power, than any other Turbine in the world. New Pamphlet sent free by



Burnham Bros., York, Pa.

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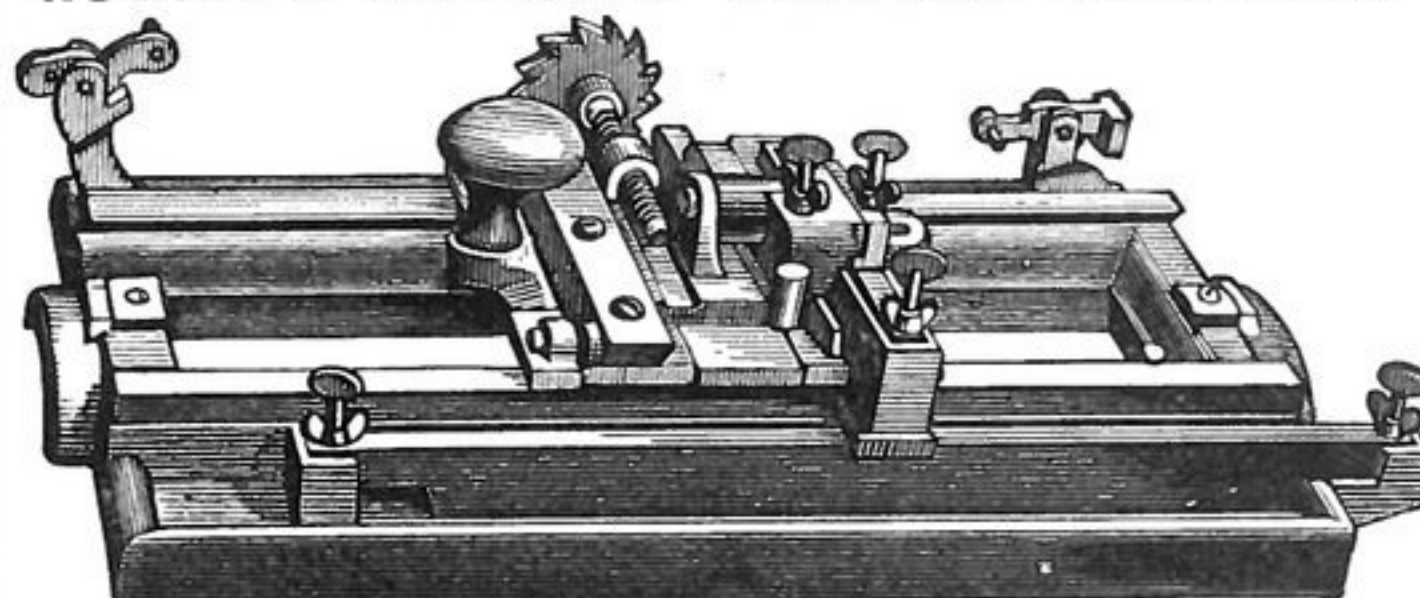
**POOLE & HUNT, BALTIMORE, MD.**

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ADAPTED TO ALL KINDS OF DRESSING.

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No 2, to face, crack, dress furrows, and will dress any size stone.....	45.00
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Will do as good work, and is more easily adjusted than any other machine. Sent on 30 days' trial. Address for circulars, containing full information.



C. S. HOOVER, Patentee and Manufacturer, 409 East King St., LANCASTER, PENN.





## OUR MINNEAPOLIS LETTER.

[From our own correspondent.]

AN INTERESTING BUDGET OF NEWS, NOTES AND GOSSIP.

In point of flour production, Minneapolis is now exceeding all former records. There are twenty-one mills kept running at their highest capacity, and the output of flour is not far from 25,000 barrels per day. This represents about 115,000 bus. of wheat that are daily ground up. Only a few of the mills are now grinding old wheat, those having it to mix doing so sparingly. The more that the new wheat is used, the more apparent become its fine milling qualities. It is better than that of last year in color, strength, and many other respects, and can be milled with greater rapidity. As the mills more generally get to work on it, they seem to be able to increase their outputs.

There continues to be a very good demand for flour, but it is sustained at the expense of prices. Wheat however, is lower, and buyers of flour have demanded concessions so vehemently, that the miller has felt it necessary to accede to them. In consequence values are unsettled, and 10 to 15 cents per barrel lower. Little or no flour is stored in the city, the shipments showing that it is being forwarded as fast as made. The practice of consigning is said to be very much less in vogue than in former years, the flour being sold at once. Many of the mills have considerable orders ahead at old prices, and are now working on them.

Our millers are now disturbed, lest freight rates between here and Chicago be raised. There is talk among the roads interested, of putting up rates five to ten cents per barrel on flour, and the millers are much agitated about it, and will bring strong pressure to bear to defeat the railroads in their effort to accomplish this end. Freight rates have nominally been 15c. per cwt., but were rebated and reduced to 12½c. This rebate has been off, and the action is looked upon as a signal for advance. Millers feel not at all encouraged at the outlook of matters. They say that should the railroads ask for higher freights, the only alternative left them is to pay the farmer less for his wheat, as their present slender margin will not permit them to shoulder the increase in tariff.

The following table exhibits the receipts and shipments of Minneapolis for two weeks:

FLOUR.			
Week ending	Receipts.	Shipments	
	Bbls.	Bbls.	
Oct. 7, . . . . .	249	145,727	
Oct. 14, . . . . .	752	142,095	
Total . . . . .	1,001	287,822	
WHEAT.			
Week ending	Receipts.	Shipments	
	Bus.	Bus.	
Oct. 7, . . . . .	1,054,000	66,000	
Oct. 14, . . . . .	1,093,000	117,600	
Total . . . . .	2,147,000	183,000	

The American Paper Barrel Co., of Hartford, Conn., recently had a car load of paper-pulp barrels filled with flour, on exhibition here. They were shipped from Hartford to Minneapolis by rail, to try their durability, and are to be shipped to Buffalo by rail and lake, and then returned to this city as a further test. They are made in the shape of an ordinary barrel, having the same bulge, and are fully as strong as the wooden barrel, and perhaps stronger. The millers here looked at them and pretty generally pronounced them a splendid package: but they were quite universally incredulous about the manufacturers being able to make the barrel at a cost that would insure its success. The members of the company, several of whom were here, would not specify any price that the barrel could be produced at, but only stated that it would be as low as the wooden barrel. If that is the best that can be done, the paper barrel will not be adopted by the millers right away. In order to come into general use, it must be placed on the market at a price considerably below the wooden barrel. Then the miller may give it his serious attention, but not till then. The plant for manufacturing 10,000 of these barrels per day, requires an investment of \$300,000 to \$400,000.

Jas. Lawrence, of Wabasha, Minn., together with the Wabasha Mill Co., made an assignment on Friday to Bruce Florer. Mr. Lawrence was heavily involved by the recent failure of the Mazeppa Mill Co. and the Minnesota Elevator Co., and this misfortune, together with the pressure of eastern creditors, led to his taking the step. The principal stock-holders in the Wabasha mill company are J. G. Lawrence, L. F. Hubbard, Lucas

Kuehn, P. A. Richards, C. H. Duryea and J. E. Young. The schedule of liabilities and assets has not been made public. The Wabasha mill has a capacity of 250 barrels per day, and it is said that the assignment will in no way interfere with its operation.

The monthly meeting of the Head Millers' Association was held on the 7th inst. Monument matters were further considered, and Frank Huyot, of Watson, was elected an honorary member. The monument committee was directed to solicit subscriptions to the monument fund, and the president was empowered to appoint three mill owners to act in conjunction with the regular committee in selecting a shaft. A vote of thanks was tendered ex-President Walsh, the retiring officer.

In the local wheat market, prices took another downward turn to-day, and the market was weak throughout. The offerings were quite large and there was more pressure to sell which increased the confidence of the bears. On the call No. 1 hard cash was offered at 74½c, a decline of ½c from Thursday, but it dropped to 74c, at which 5,000 bu., and two cars were sold. October sold at the same price and 4,000 bu November at ½c advance. Other grades were relatively lower.

The Florence mill of Townshend & Co., at Stillwater, has been leased for a year by Hinkle, Greenleaf & Co., of this city, and started up under the management of Mr. Townshend. The St. Croix will also be put in operation as soon as the flour market will justify it. Albert Drews, the former head miller, has the mill in charge.

Wm. R. Reid, formerly in the Pettit mill, was one of the proprietors of the Imperial mill burned a few days since at Fort Dodge, Ia. The firm has not yet arrived at a conclusion as to rebuilding. Should the mill be rebuilt, it might not be at the same place. In case the firm does not rebuild, it will probable engage in wholesaling flour.

It is now on open secret that the Minneapolis mill, owned by Crocker, Fisk & Co., will be increased one-third in capacity. At present it can make 600 barrels or over. The machinery is being arranged for, and change will be made at once. Another mill in the city will also be enlarged from 700 to 1,000 barrels.

The receipts of wheat now are heavy, and the Millers' Association is sending a large amount of money into the country to be used in its purchase. The receipts during the past fortnight have aggregated over two million bushels. The stock in store in Minneapolis elevators is about 14,000,000 bushels.

Commission men and millers not members of the Millers' Association complain that the Manitoba railroad refuses to deliver wheat except to elevator A (on the road's own tracks) or any non-association mill. A committee has been appointed by the Chamber of Commerce to investigate the matter.

The Minnesota statistical agent has compiled a table showing that 2,780,539 acres of wheat were grown this year, yielding 17.18 bus. per acre, or a total of 47,792,662 bushels. The oat acreage is given as 1,027,599, yielding 41,293,742 bushels; barley, 301,410 acres, yielding 8,618,524 bushels.

It is understood that the Mazeppa mill will be sold at auction sale the first week in November, and it is not unlikely that it will be bid in by some of the creditors, and then started up under the management of W. P. Brown, of the old company. This is said to be the programme.

The Crescent mill at Eau Claire, Wis., has been leased by Jas. A. Heune and J. T. Ellis, and they are repairing and getting it in readiness for operation. Wm. Newell, of this city, has been offered the position of head miller of the mill, but it is not certain that he will accept it.

Up to date, it is not known what will be done with the Minnetonka mill. It is owned by a stock company, the members of which do not care to run it, and it has been idle for two or three months. If it is not either sold or rented, the owners will probably be induced to start it up again.

C. A. Pillsbury & Co. have given \$500 for the Head Millers' monument fund. Washburn, Crosby & Co. donated a like sum, and the fund now amounts to \$2,239. It is thought that the fund can be easily increased to \$3,500 or \$4,000 by subscriptions of other milling firms.

It is now an exception when the Pillsbury A mill does not turn out 5,000 barrels of flour per day, frequently going over that figure. One day last week it made over 5,600 barrels, and the boys are yet unsatisfied. They evidently have their optics on 6,000 barrels.

J. Silas Leas is here, and is getting the Daverio rolls into a number of the mills. The Crown roller mill recently put in four sets, and the Palisade and Galaxy each got two sets.

Thos. Farmer, of the Farmer Roller Mill Co., Grand Rapids, Mich., spent last week here, and succeeded in placing a machine in the Palisade mill on trial.

S. L. Hurlbut, of Wilmar, wants to get a purchaser for his interest in the mill which he and

H. S. Goff are building at Superior city, Wis., near Duluth.

Wm. G. Cheever, formerly head miller of the Freeman mill at La Crosse, Wis., has accepted charge of Nelson, Story & Co.'s mill at Bozeman, Mon.

J. C. Menor, one of our best known head millers, has gone to Salem, Ore., to assume charge of the two mills of the City of Salem Milling Co.

Thos. Place, a well-known miller of this city, has gone to Schuyler, Neb., to run Wells & Nieman's mill. He took Chas. Dixon with him.

Cahill, Fletcher & Co., proprietors of the Galaxy mill, will remove their office to the Chamber of Commerce.

Willford & Northway change the 50 barrel mill of W. W. McLeod, Cormorant, Minn., over to the roller system.

Burr Deuel has been appointed deputy superintendent of the Minnesota flour exhibit at New Orleans.

The Northwestern Miller folks are making great preparations for their holiday number.

Chas. Espenschied, of Hastings, will increase the capacity of his mill to 500 barrels daily.

Scotch and English flour men have been very thick about town the past month.

A call board has been established by the Minneapolis Chamber of Commerce.

Our mills are finding it difficult to get as many freight cars as they want.

Minneapolis, Oct. 18.

CALEB.

## Notes from the Mills.

An ear of corn gathered in Union county, Dak., contained, by actual account, 1,742 grains.

James Coleman is building a large flour mill and barrel factory at Villa Rica, Ga.

The flour mills of R. H. Culaney, at Middleburgh, Va., are to be enlarged and improved.

Campbell & Co., dealers in grain at Hastings, Neb., have made an assignment with heavy liabilities.

Between July 1 and Sept. 15, 85,000 barrels of flour were exported from San Francisco to China and Japan.

Builders and exhibitors of flour mill machinery, at the St. Louis exhibition, report most encouraging sales.

The Northern Pacific Elevator Company in Dakota has handled 75,000 bushels of wheat daily since the harvest.

It is calculated that the Southern States, owing to the fine crops there, will reduce their purchases of foodstuffs this year from \$175,000,000 or \$200,000,000 to less than \$125,000,000.

Hiter's elevator at Monticello, Minn., burned on Oct. 14, together with 5,000 bushels of wheat. The tank house of the Manitoba road was damaged. Loss, \$5,500; insurance, \$3,500.

It is only a question of time when steam plows will be all the go. A successful trial came off near Mapleton, Minn., a few days ago. A single machine is said to be capable of turning over fifty acres a day.

The mills are grinding steadily, says the Janesville, Minn., *Argus*, but the receipts of wheat are not sufficient to supply them. Unless a change takes place so that farmers can bring in their crop, wheat will be shipped in.

Europe will want about 250,000,00 bushels more wheat than this season's yield, which is an average one. The exports of wheat now average 2,500,000 bushels a week, against an average of 1,800,000 bushels same time last year.

The loss by the fire, Oct. 15, at Port Dickinson, N. Y., is now estimated to be over \$100,000. Geo. Q. Moon's flouring mills, together with the paper mill of Cary, Nash & Ogden, were entirely destroyed, and the industries of the place have been almost completely swept away.

At Lowell, N. Y., Oct. 16, Giles U. Morrison's grist mill, situated on the south bank of Mill Creek, was discovered to be on fire. The mill was destroyed and some damage was done to adjacent property. Total loss, about \$12,000, of which about \$10,500 is borne by Mr. Morrison, who had insurance for \$6,000.

At Valdosta, Ga., Oct. 14, the steam gin and grist mill of Mr. Wisenbakers, on Patterson street, caught fire from a match which had been dropped in the cotton. The match was ignited while going through the gin, and being in the midst of the lint the flames spread rapidly. There was no insurance, and Mr. Wisenbaker's loss will foot up at least \$2,500.

A new elevator has been built at Weatherford, Tex. It is 28x67 feet on the ground and 67 feet high, the first thirty feet being built of stone, and contains twelve bins, each 26 feet deep. It is provided with a Barnard & Leas separator, and is first-class in every respect. Its capacity is 25,000

bushels, and it was built at a cost of \$9,000, by the owners of the "Crystal Palace" flouring mills, of the same place.

More smut is in the Northern crop this year than ever before. Out of fifty cars received at Duluth from Bismarck and points beyond, only one has graded higher than No. 3, on account of smut. A good deal of smut is found in Dakota this year, and it has appeared in fields which had never known its presence before. The wheat condemned at Duluth was all on account of dampness, and shows the damage from this cause to be about 5 per cent.

Within the past week says an exchange, arrangements have been put on foot for the erection of two large manufactories in Chattanooga, Tenn., which will add vastly to her interests of that character. Mr. James S. Oakes, of Steubenville, Ohio, arrived in the city a few days since and after prospecting for a few days concluded to locate. He is at the head of a syndicate who propose to erect one of the largest flouring mills in the south at this place. The mill will be located on the river bluff, and will have splendid water and railroad facilities.

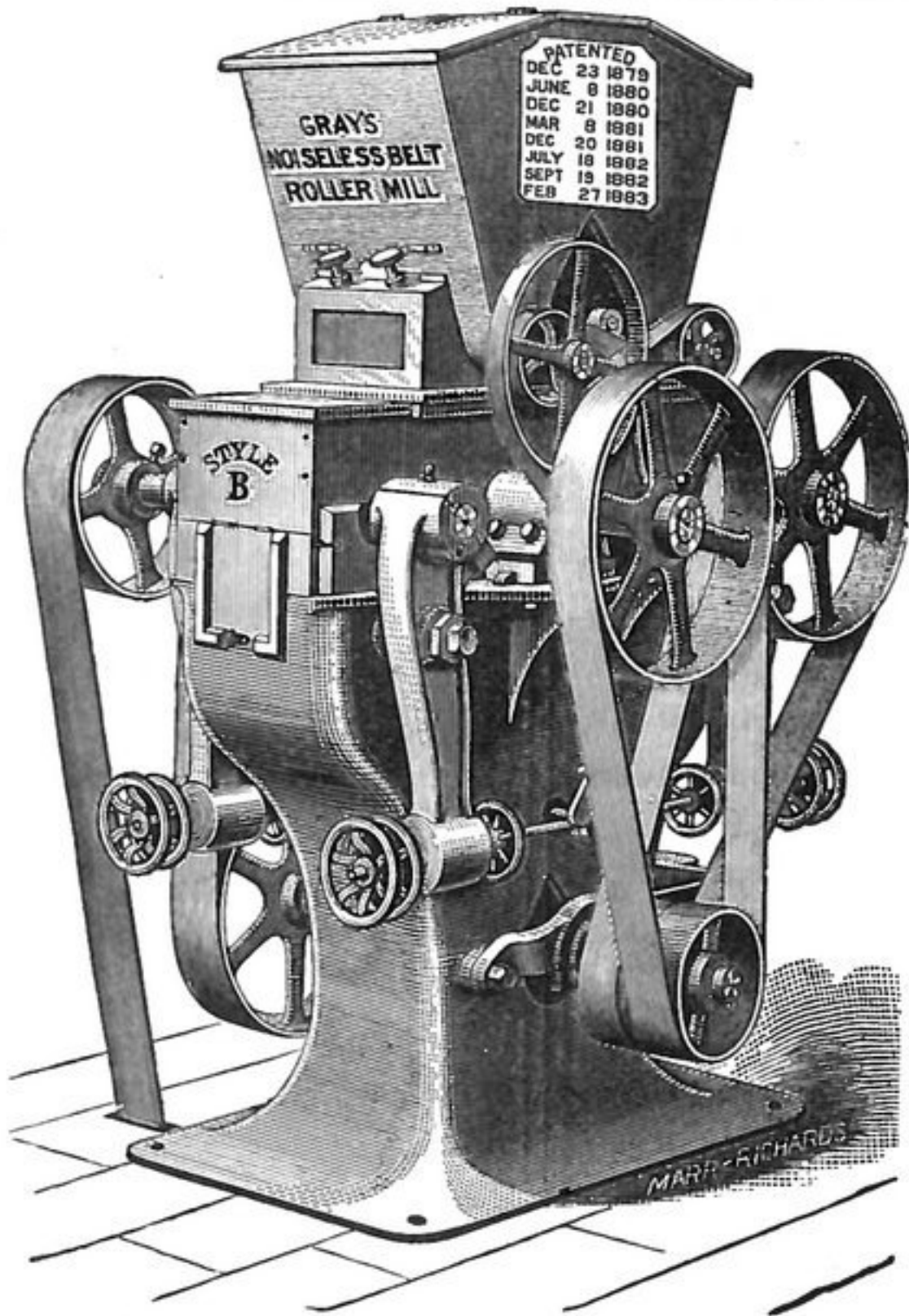
The L. C. Porter Milling Company of Winona has, it is said, received a letter from Mr. Norman B. Stevens, their representative, who is traveling in Canada, saying that the millers there are paying eighty cents per bushel for wheat grown in that section, but it is of inferior grade, and in order to bring it up they are buying largely of the hard varieties of Minnesota wheat and paying one dollar a bushel to bring it up to grade. Could anything be more convincing as to the importance of raising hard wheat in Minnesota, queries the Winona *Republican*.

The inspection committee of the Minneapolis Chamber we are told, still refuse to make public the result of their examination in the matter of grades. It has leaked out, however, that some of the deputy inspectors have not attended strictly to the rules, or performed their duties satisfactorily. On Oct. 11, Mulford & Bowen appealed from the inspection of seven cars of wheat out of a lot of fourteen cars and the grade was improved on all the cars. It is thought the chief inspector has been instructed to let down on the grade and raise the quality of some of the deputies. The complaints are not all confined to too high grading, but complaints are made of great lack of uniformity.

Duncan Anderson, miller, of Ogdensburg, N. Y., reports the following results of a test of six days with a Cummer engine which are certainly remarkable: The engine is 14x30, 112 revolutions, condensing. It run continuously twenty-four hours per day without shutting off steam during the six days. Coal consumed, 31,861 pounds; flour manufactured, 1424 barrels; coal per barrel, 22.37 pounds. The making of flour costs about 12-horse power per barrel per hour. The grain in this case is reported as quite green, requiring more than the average power, but assuming that it has required only 11-horse power per barrel, the above test would show about two pounds of coal per horse power per hour.

W. F. Steele, the Kidder county farmer, arrived in St. Paul recently from Duluth, whither he went to investigate the subject of grading wheat, we are told by the *Pioneer Press*, Oct. 16. Mr. Steele was incensed and expressed himself as determined to erect an elevator of his own on Lake Superior. His latest grievance was that of seven cars of wheat, raised from the same field—and that field a level one—two cars were graded "No. 1," two "No. 3" and three "rejected." Smut was alleged as the cause of the low grades, and this Mr. Steele avers could not be, as, if five cars were smutty, the other two must have been. He took to Duluth affidavits from two of his farmers, M. D. Mulnix and H. B. Barnaby, which set forth that the wheat was alike in the seven cars. These affidavits he showed to Messrs. Olmstead & Munger at Duluth, but did not get much satisfaction, since they claimed if a mistake had been made it was too late now to rectify it, his seven carloads being already mixed in the bins with other wheat. Mr. Steele is firmly convinced that a money-making ring exists, with Buffalo as its most eastern portion. He points to the pertinent fact that whereas No. 1 hard is worth fully 15 cents more per bushel than No. 2 (soft), the closing prices on Tuesday evening were: No. 1 hard, at Duluth, 79 cents; No. 2 soft, at Chicago, 77½ cents, or but 1½ cents difference. The difference in transportation cost between Duluth and Buffalo and Chicago and Buffalo is less than two cents. In short, according to Mr. Steele's figures, by the Duluth system, Duluth No. 1 hard and Chicago No. 2 soft would be worth about the same in Buffalo. As everybody knows, they are very far from equal in value, and Mr. Steele is therefore satisfied that the ring makes from 7 to 10 cents per bushel on the wheat they grade so low at Duluth.





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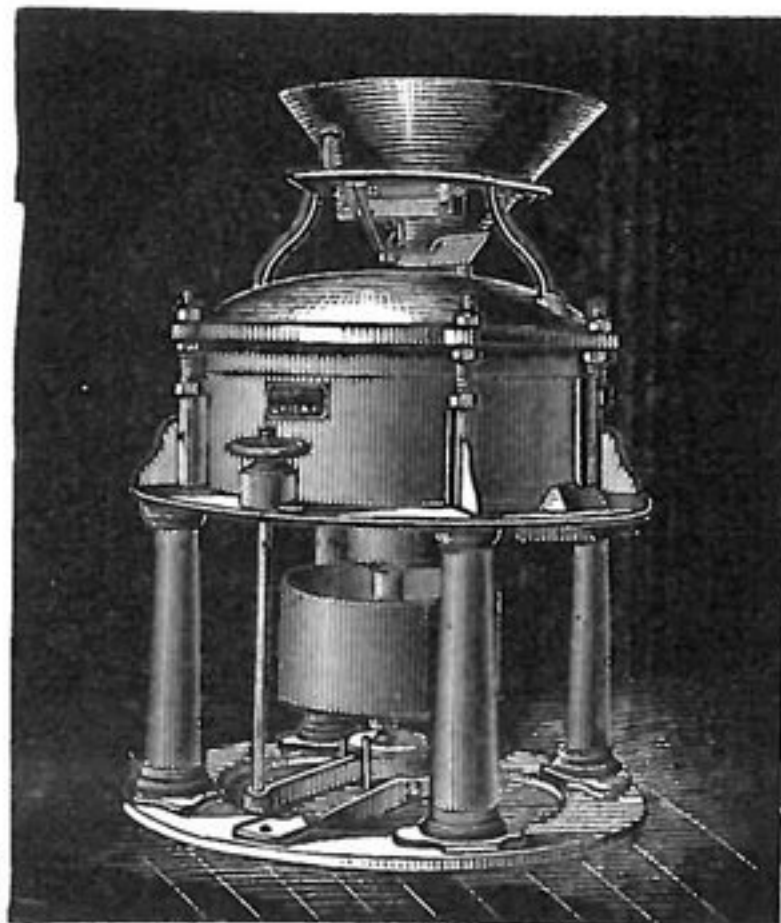
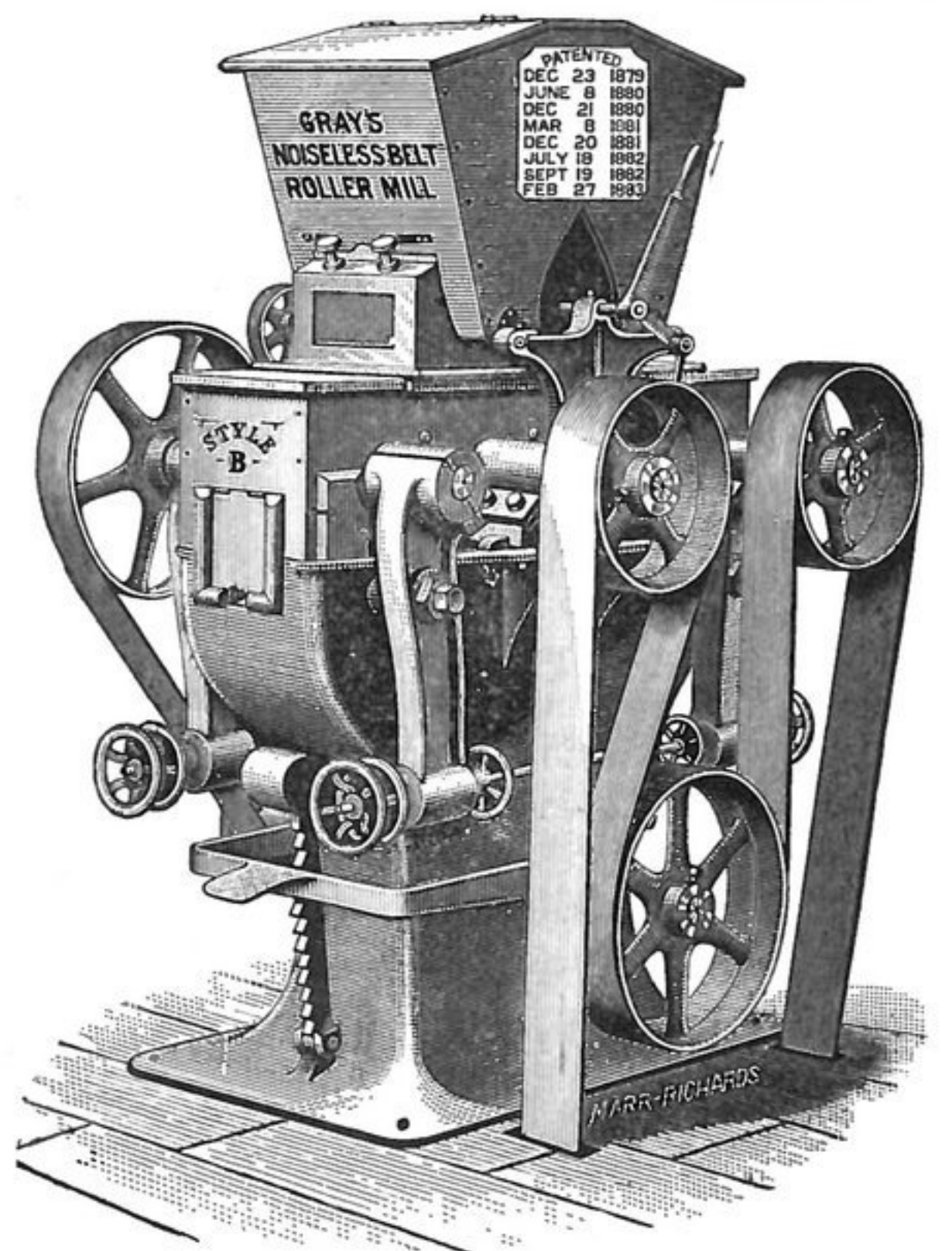
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**MILLING MACHINERY,**  
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Eclipse Tire Benders, 15 " "

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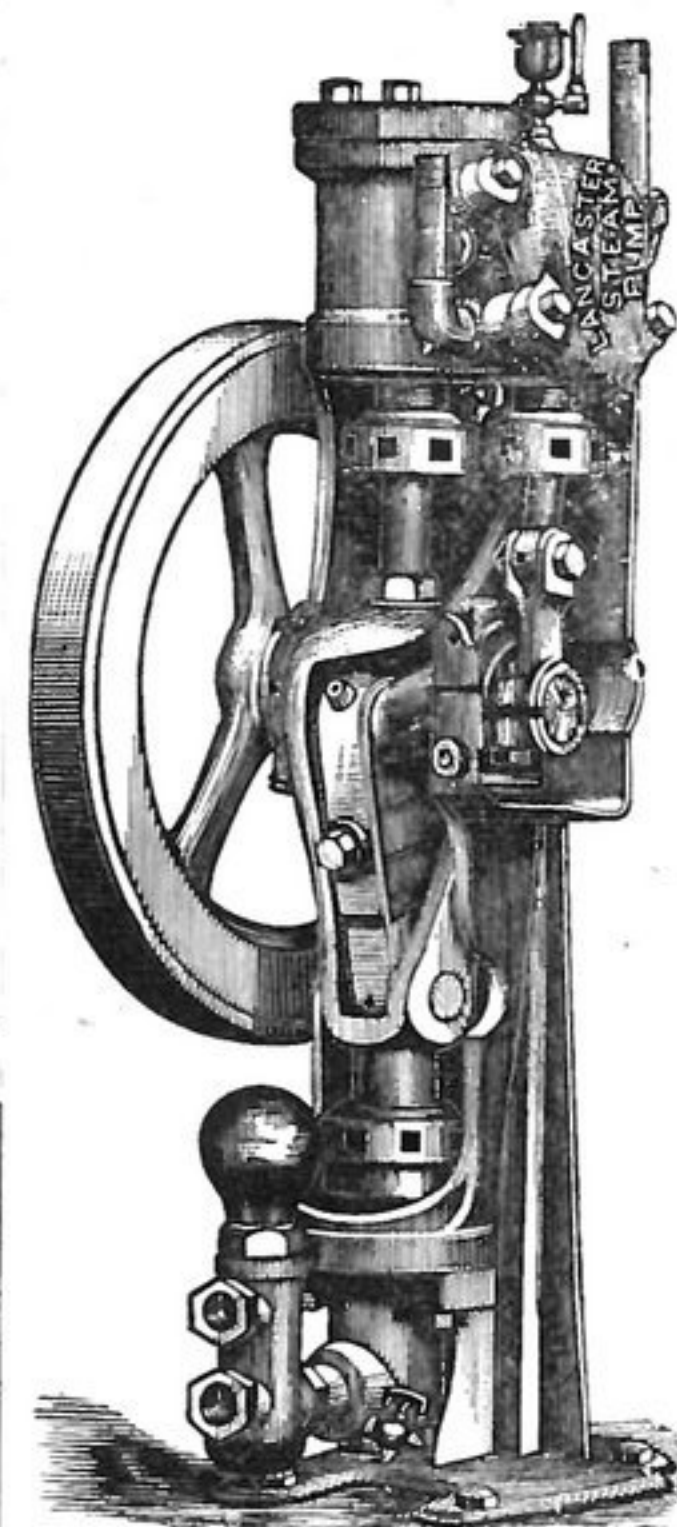
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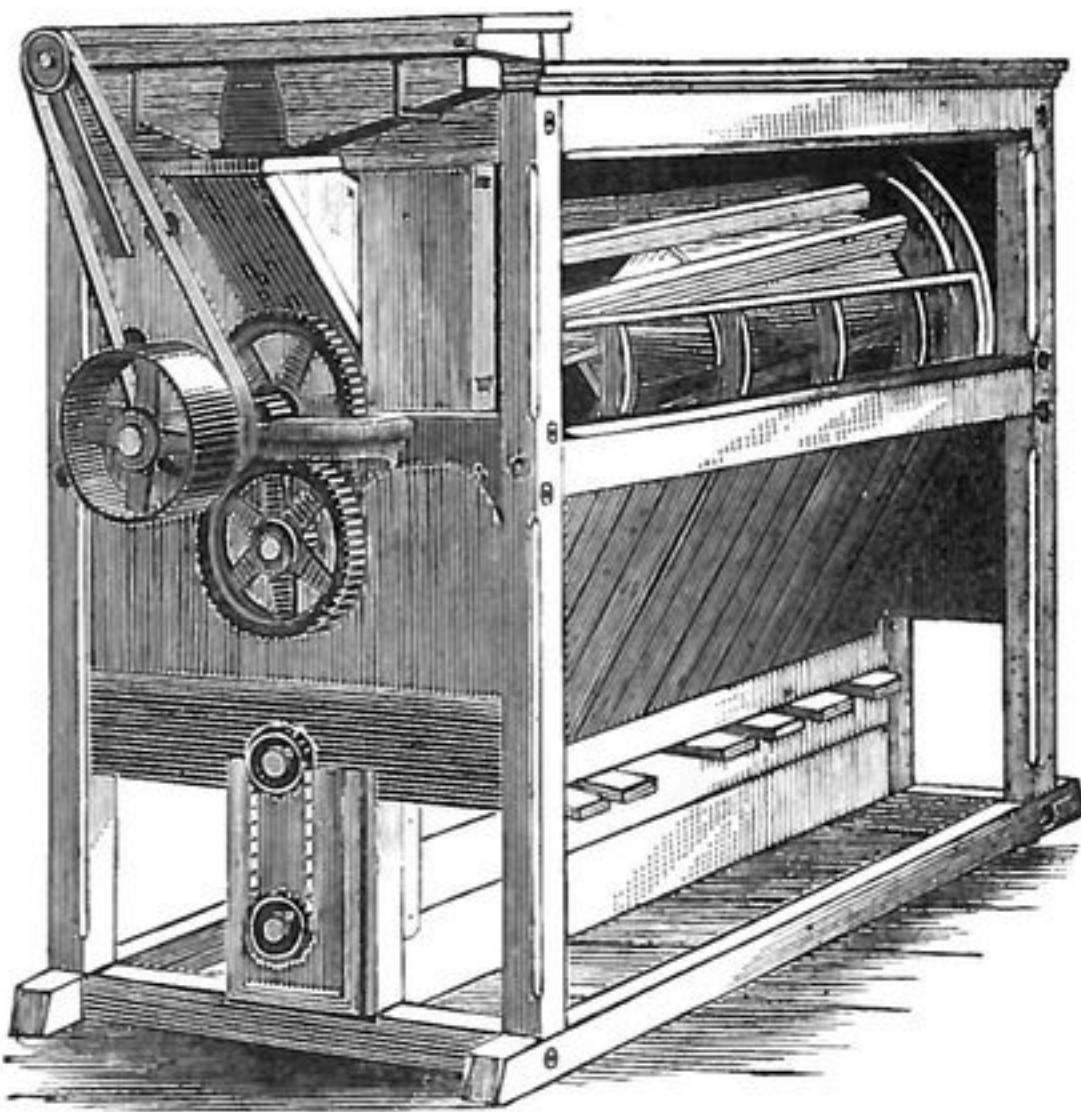
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AND MACHINE WORKS,

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Machine is

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MR. C. N. SMITH.

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Yours respectfully,  
CHAS. S. DURST, Supt.

CHAS. SHUEY, Head Miller.

OFFICE OF LUDLOW MILLS, DAYTON, OHIO, April 23, 1884.

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PRICE, 30.00.

RIGHT-HAND MILL.

CAPACITY 75 BUSH. PER HOUR.

Thousands of these Crush-  
ers are now in use, and  
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**R. C. McCULLEY, LANCASTER, PENN.**



## ODELL ROLLER MILLS

ARE MADE ONLY BY  
STILWELL & BIERCE MFG. CO., DAYTON, O.



## AN ENGLISH MILL.

THE following description of the above named remodeled milling establishment, which is located at Fleet, Yorkshire, is copied by the "Miller" from the Rothwell Times: Mr. Jackson, the proprietor, has two great advantages over many of his competitors; he has easy access both to the river, the railway, and the road, either for the reception of grain, or the forwarding of flour; he has also the immense benefit of possessing two large water wheels, as well as a powerful steam engine, so that working both together, he obtains great motive power at a comparatively small cost. By means of extensive and scientifically arranged shafting and cogs, the varied elevators, rollers, fans, purifiers, hoists, &c., are all worked by mechanical appliances, enabling the proprietor to secure efficiency and regularity of motion, with the smallest amount of manual labor. The first motion from the main shaft is obtained by a 20-inch double belt, from which the various driving belts and shafting receive their impetus.

The grain being delivered (principally by boat) is first hoisted up into the highest story, where we find Californian, Indian and English wheat stored in large quantities in sacks. Here the various descriptions of wheat are mixed together in certain proportions, whereby the best properties of each may be obtained, huge bins being used for the purpose. In this room, too, there is a simple but effectual contrivance for separating the small grain from the large, while any pieces of wire, nails, needles, pins, etc., are picked out, and prevented from going into the grinding machinery. There is also here a machine for cleaning the foreign grain, before being used. After being thus prepared by separation, by cleaning, and by mixing, the grain is carried by elevators, of

which there are many sets, to the first pair of rollers. In the construction and arrangement of these rollers consists the fundamental change in the mode of producing flour.


Instead of the old style of large French stones, one moving horizontally above the other, we find a number of small hoppers fed by continuous elevators fitted with small scoops which empty an even supply of grain into them; this is allowed to pass through a regulator into the box containing a pair of corrugated metal rollers of about 20 inches in length and of some 10 to 15 inches in diameter. Each set of rollers is specially adapted for the kind of work it is intended to perform; the first set being corrugated to about one-tenth of an inch, and simply breaks the grain in two; this falls into another elevator, which again conducts the broken grain into the scalping reel and duster, whereby the impurities of the crease, and the germ, are removed. It then goes on through successive breaks (rollers) and scalpers to the fifth, after which it arrives at the bran duster—the various rollers diminishing in the width of these flutings until there are twenty-four of these corrugations in an inch depth. The "chop," consisting of a small proportion of flour, with "semolina" (as it is called) is then conveyed to the silks, where the flour is separated, and the middlings conveyed to the proper purifiers. The purified product then passes to smooth rollers worked in a similar manner to the fluted ones, but specially adapted for the further reduction and refinement of the flour. There are nine of these machines, having fourteen sets of rollers of various classes, all made of "chilled" iron, and fitted with automatic motion. On leaving the last of these rollers, the flour passes into centrifugal fans and purifying sieves or "silks," by means of which any deleterious or "chaffy" matter is

removed, and it is finally delivered into the sacks by special apparatus, and is thus ready for the consumer or the merchant.

As will have been observed, the manufacture of flour has become an entirely different affair from what it used to be. By the "roller" process, better and whiter flour can be made even from a worse quality of wheat than can be obtained from the stones. The Fleet mills, however, still hold to the old traditions, and the purchase of the best grain is held to be an important standing rule, especially as the grade of flour depends so largely on the care and attention bestowed on its reduction and purification. By the new process, we understand, the cause is removed of bread "running" in the oven, and the bread is much sweeter as well as purer and whiter, and therefore more acceptable to the majority of persons.

To celebrate the completion of the mill, the employees of Mr. Jackson and those of the millwrights, Messrs. Joseph Ellison & Son, gathered on the evening of the 13th inst., to partake of an excellent repast in the New Mason's Arms at Oulton. After the tables were cleared the company proceeded to elect a chairman, and on the proposition of Messrs. H. Bywater and Garnett, Mr. J. H. Jackson was called upon to occupy that position. In taking the chair, Mr. Jackson said it gave him very great pleasure to be honored with that post; at the same time he felt sorry that his father was not able to attend, though he would have liked to have been present. He stated that it was only about four months since that they thought of having the old machinery taken out of the mill and replaced by new, but "time works wonders," and so it had done in this case. Mr. Jackson warmly complimented the firm of Messrs. Ellisons, the millwrights, for their manner of doing their work, and if success attended

the new plant, it would be largely due to their efficient work. He pointed out that he had been acquainted with several eminent workmen, but thought that Messrs. Ellisons could teach them all a lesson in making a good substantial job of what they took in hand, because when they commenced to do a job they did it right. He had very great pleasure in proposing the "health of Messrs. J. Ellison & Son." Mr. Jos. Ellison, Jun., responded, and thanked the chairman most heartily for the high tribute he had paid to their firm. They had done their utmost to fit up the mill in the best possible manner, and remarked that when a job was well done, if properly looked after, it would need little repairing for a number of years. He concluded by hoping that success would attend the new roller plant which they had lately put down. Mr. T. D. Jackson gave the "health of Mr. John Ellison," the foreman of the millwrights, and spoke in eulogistic terms of the manner in which he had conducted the work throughout, while he also paid a high compliment to the workmen, who, he said, had obeyed his (Mr. Ellison's) orders during the time they had been working at Fleet Mills, in a manner which did credit both to themselves and their foreman. Mr. Ellison replied in a suitable manner. Mr. Garnett proposed the "health of Mr. W. Smith," who has been the foreman at the Fleet Mills for upwards of 20 years, and who has given the greatest satisfaction to his masters during the period that he has been with them. A few other toasts were drunk, including "The roller plant," proposed by Mr. Jos. Ellison and Mr. Roland White, and "Mr. and Mrs. J. H. Jackson," which was given by Mr. H. Bywater. The rest of the evening was devoted to songs, recitations, &c., in the performance of which the proceedings were kept up till ten o'clock.




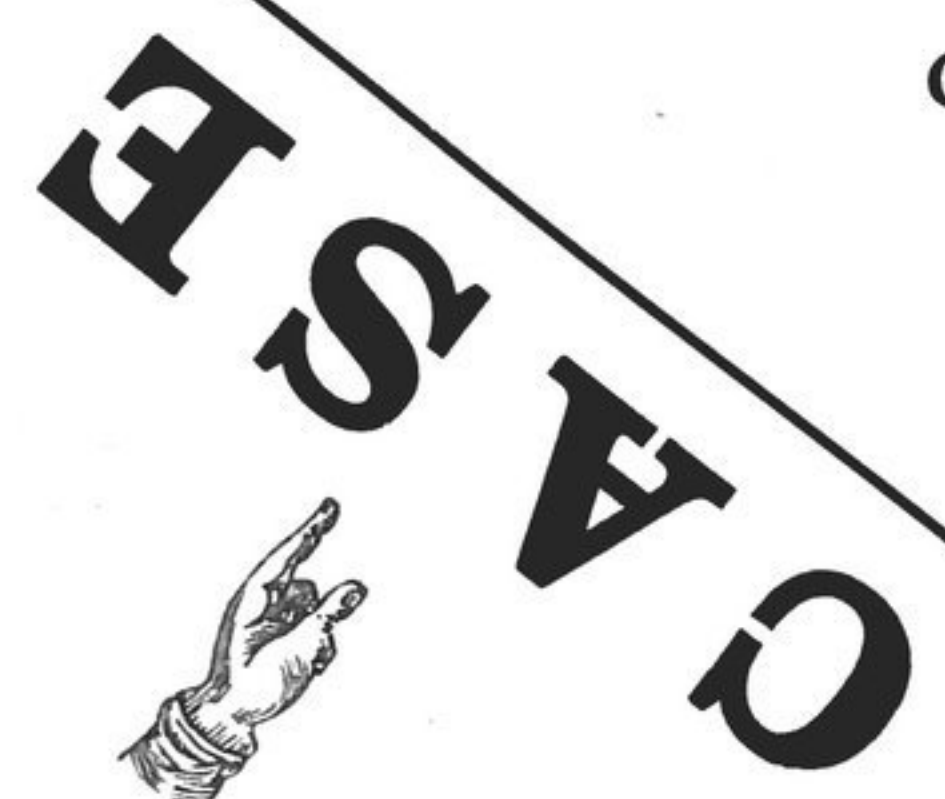
# CASE

## TWO GOOD MILLS.

D. F. Robinson and W. H. Tenney & Son, both of Georgetown, District of Columbia, have each just changed their mills to the Roller System. They have a full line of Bismarck Rolls, Case Purifiers, Case Centrifugal, Scalping, and Bolting Reels. Capacity 250 barrels each. Any miller who wishes to know how our machinery works or how our system of separations and arranging a mill works, are requested to write to either of the above-named courteous gentlemen for their opinion. They will get nothing but the truth and facts from either and no stronger advertisements than these could be written of the merits of the Case Machinery.

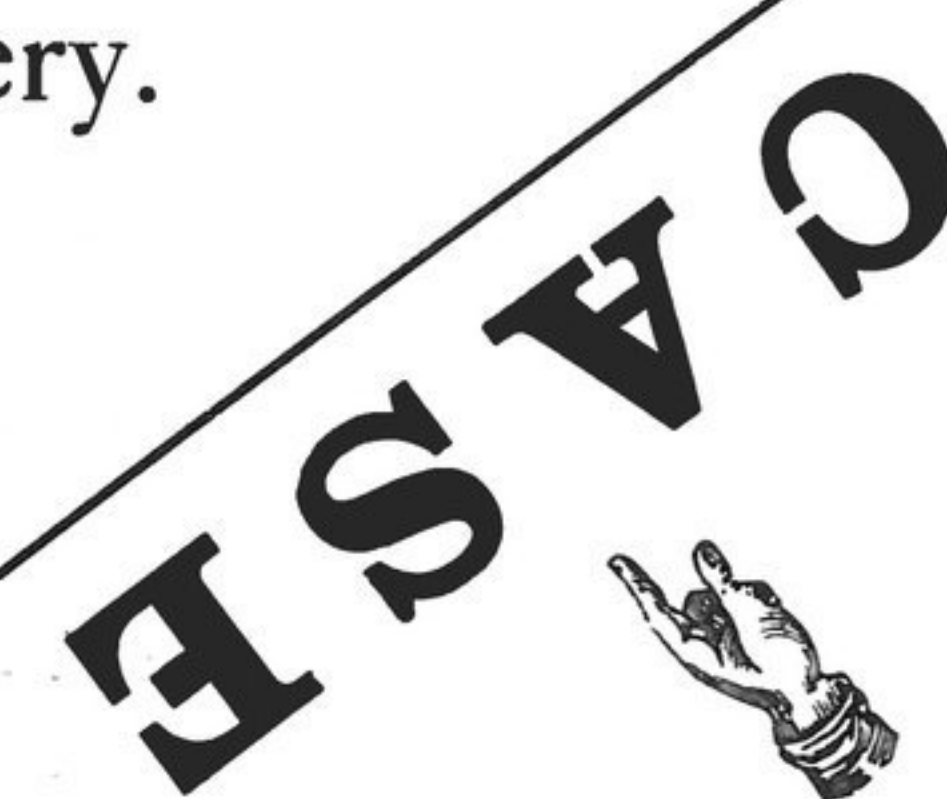
# CASE





# CASE MFG. CO.

## COLUMBUS, O.





# JONATHAN MILLS UNIVERSAL FLOUR DRESSER.

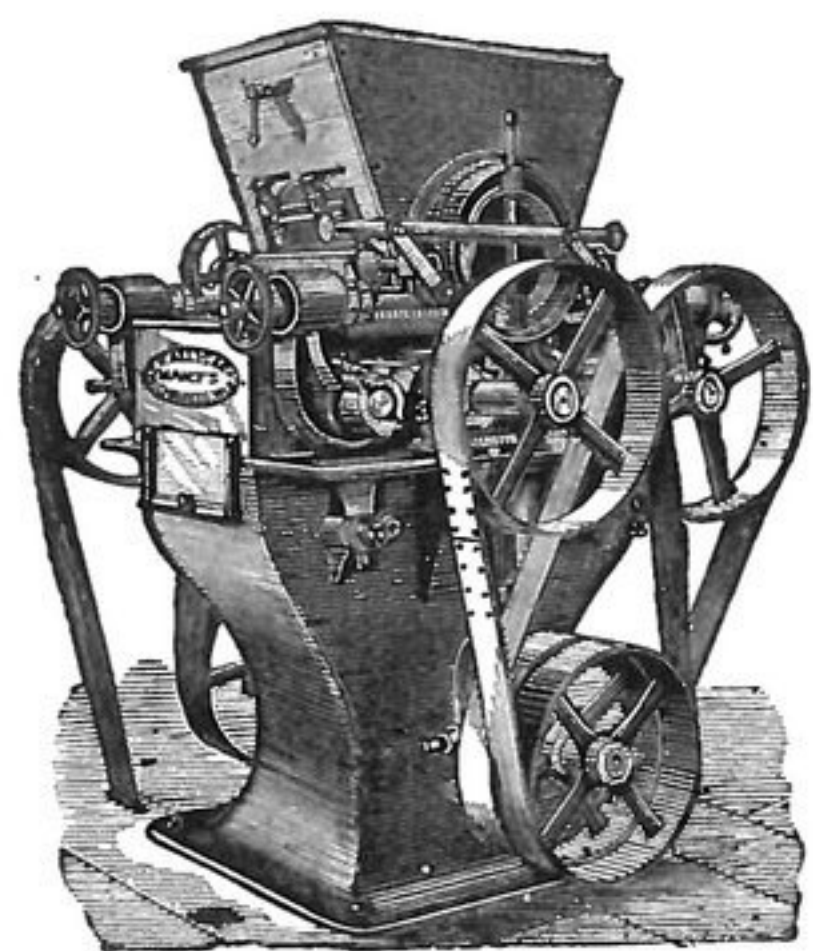
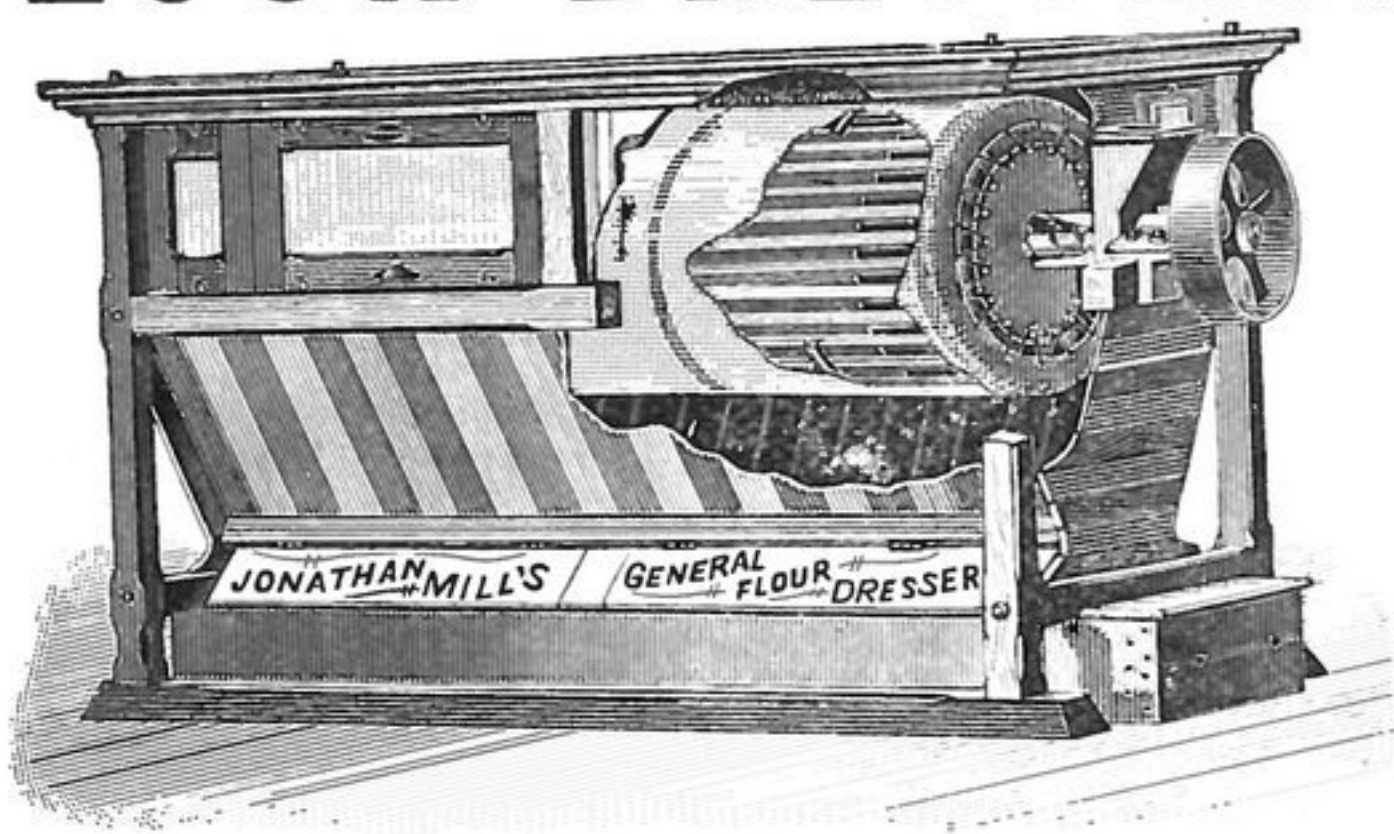
Guaranteed to be superior to any other bolting device for clear, clean bolting or rebolting of all grades of Flour.

**FINELY DESIGNED AND MECHANICALLY CONSTRUCTED.**

SLOW SPEED. OCCUPIES SMALL SPACE, AND HAS IMMENSE CAPACITY.

For Price List, Sizes, and Dimensions, Send to  
**THE CUMMER ENGINE CO., CLEVELAND OHIO.**

Send also for 150 Page Catalogue Describing their Engine



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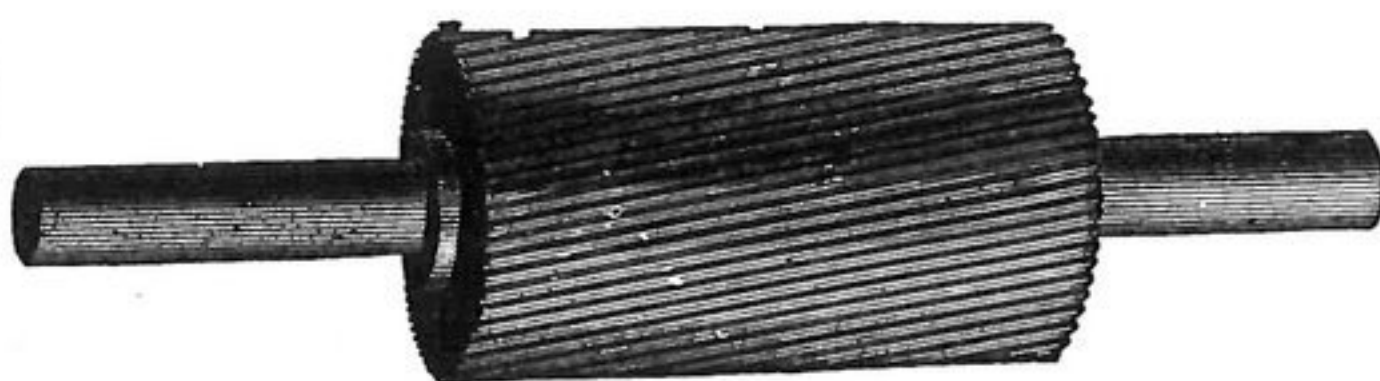
Manufacture a Complete Line of

**FLOUR MILL MACHINERY,**

*Including Portable Corn and Middlings Mills.*

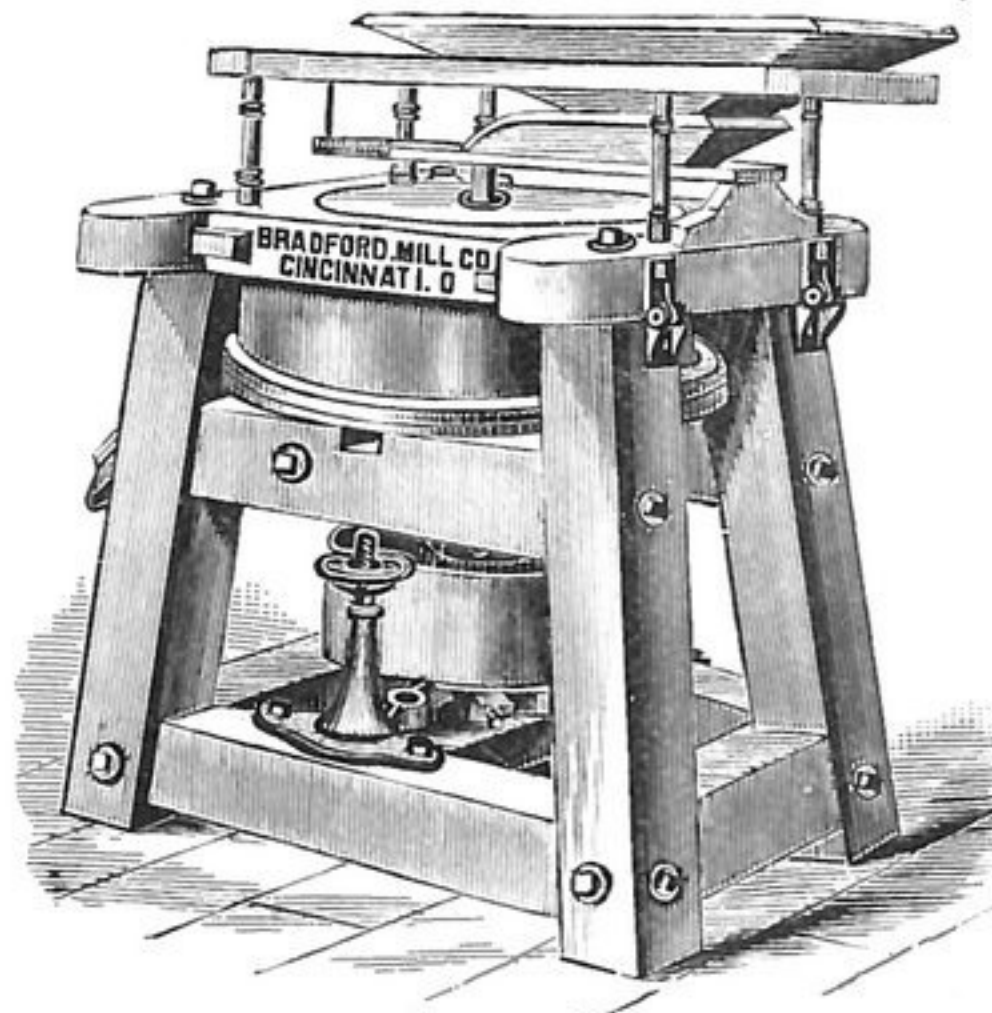
**RE-GROUNDING AND RE-CORRUGATING**

**PORCELAIN  
ROLLS  
RE-GROUND.**

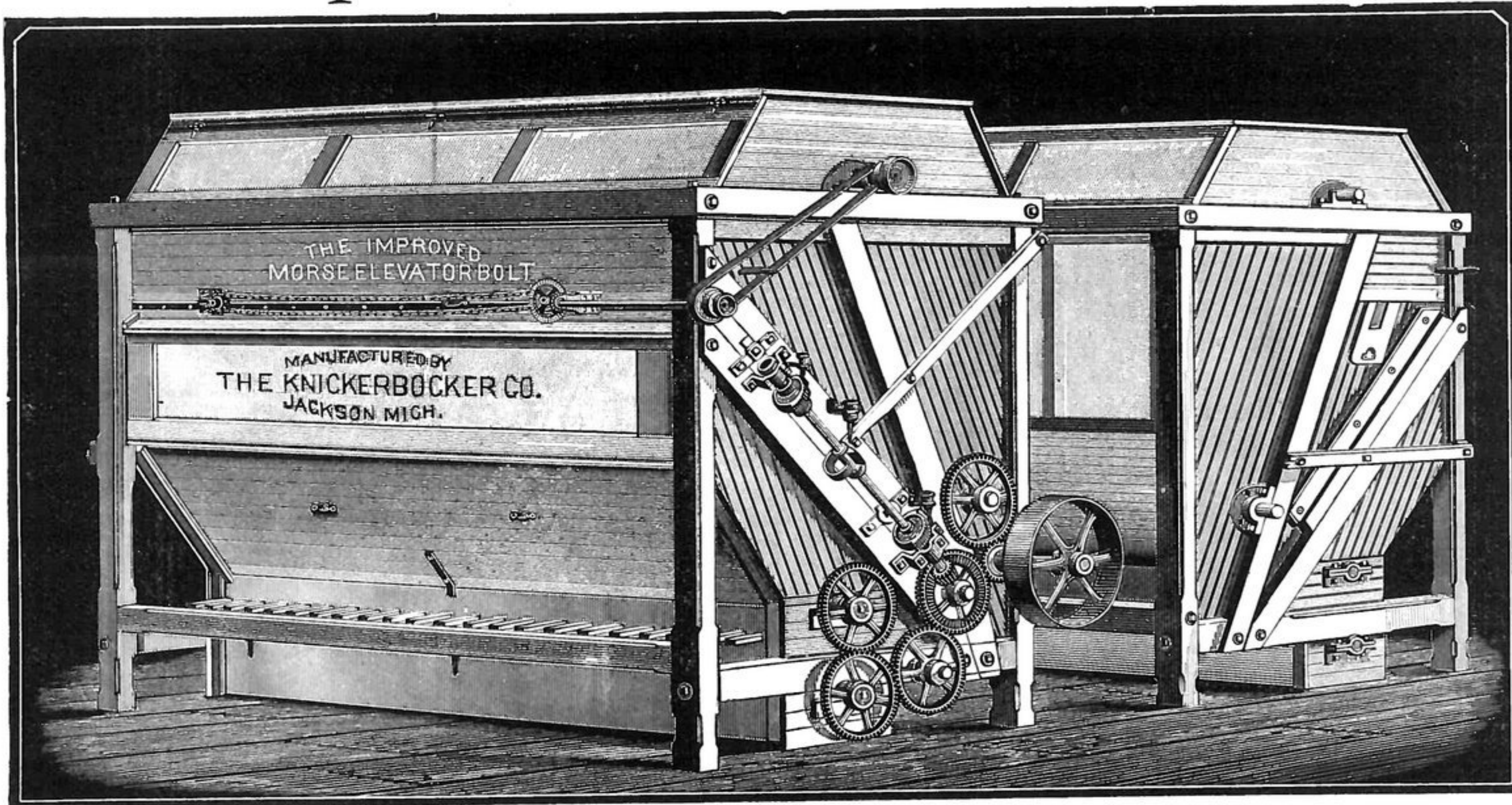


**CHILLED IRON  
ROLLS  
Re-Ground and  
Re-Corrugated.**

**EIGHTH AND EVANS STREETS, - CINCINNATI, OHIO.**



**The Improved Morse Elevator Bolt.**



DEMONSTRATED IN OVER 100 MILLS TO BE THE BEST BOLTING DEVICE KNOWN.

**THE KNICKERBOCKER CO., JACKSON, MICH.**

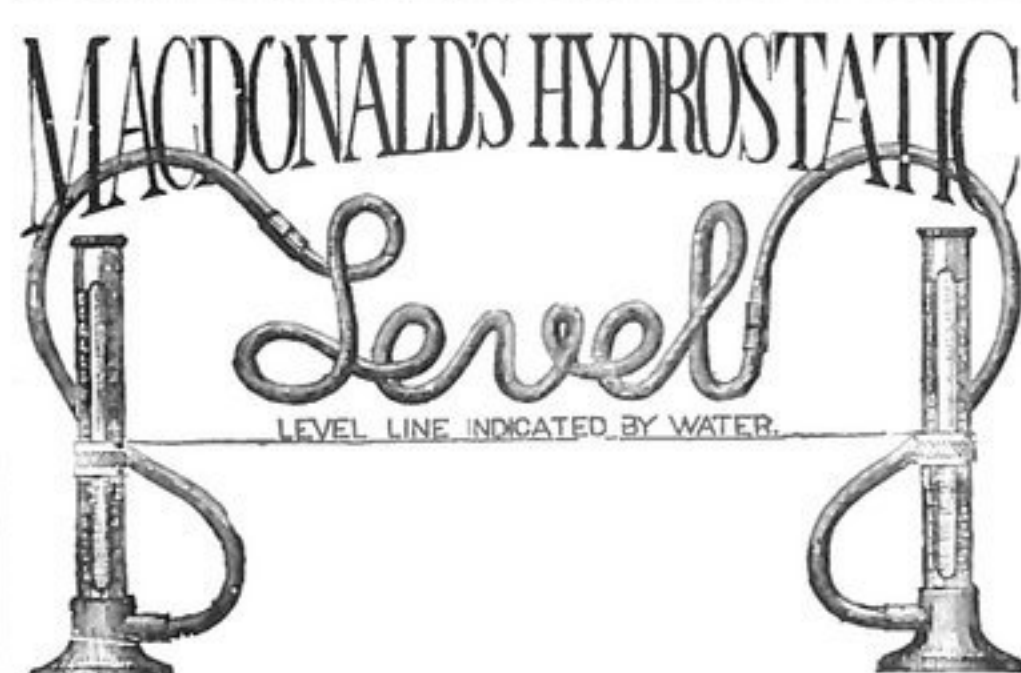


A tool for Cutting, Leveling and Polishing the Furrows and Face of Millstones.

Eight inches long, 2 1/2 inches wide, 1 1/2 inches thick. Received the highest and only Award given to Polishers at the Millers' Exhibition, Cincinnati, Ohio, June, 1880.

For facing down high places on the buhr, this tool has no equal, and can be done much better and in one-sixth the time than with the mill pick. It is much larger, cuts better, can be used on either face or furrow, can be used until the corundum is entirely worn out on one side and then turned on the other side. Has over four times the amount of corundum and when the corundum is worn out can be replaced in the handle at a small cost. Sent by express, \$3.50. Satisfaction guaranteed, or money refunded. Address

**HORACE DEAL, Bucyrus, Ohio**



Sight-lines, targets, straight-edges and all other fixings, as well as the extra time and help required to work them with the spirit level, done away with by this instrument.

Jas. Macdonald, 55 Broadway, New York.

# CAREY'S DOUBLE ANCHOR BOLTING CLOTH

Best in the Market. Every Yard Guaranteed Always up to Standard Count.



REGISTERED TRADE MARK.

**SOLID COTTON BELTING. MILL PICKS.**

**FINE FRENCH BURR & ESOPUS MILLSTONES**

BELTING.  
PORTABLE MILLS.  
SMUT MACHINES.

**ELEVATOR BUCKETS,**

BRUSH MACHINES, AND  
MILL FURNISHINGS GENERALLY.  
Send for Catalogue and Price List.

**SAMUEL CAREY, 17 Broadway, NEW YORK.**



HAS BEEN AWARDED  
FIRST AND ONLY PREMIUM  
AT THE  
Millers' International Exhibition.



Office of THE MILLING WORLD.  
Buffalo, N. Y., Oct. 22, 1884.

The prevailing low prices for wheat, have encouraged very liberal purchases by millers, and although it will not be very generally admitted, there is a sufficient margin of profit in converting wheat into flour to justify millers in running to full capacity, and this is being done. How long the difference in values will permit this is, of course, impossible to determine.

Concerning the wheat market the *Commercial Bulletin*, of this morning, says: "The indifferent wording of the foreign advices at hand this morning per cable furnished a disappointment to the hopes awakened yesterday afternoon by the private advices, and deprived the 'bull' element of the principal material upon which they had to depend as a leverage for raising a wheat market already weighted with a visible supply of over 32,000,000 bushels grain and the tide of receipts still regarded as very full. But the fact remains that the price of wheat is very low, and all short selling is made with conservatism. Thus, with the local sentiment rather bearish, the market for wheat opened only  $\frac{1}{4}$ c lower, and immediately recovered, and continued to gain strength as the day advanced. Exporters took hold of the cash wheat with, according to the public advices, no reasonable warrant; but the private accounts, as was the case yesterday, have been to-day running better than the public advice, and with unfavorable weather at the West there has been some sharp buying for foreign account, both of cash grain and options. The cash property shows an advance of  $\frac{1}{2}$ @10c, and is firmly held at the close. At the best point the option list showed an advance of  $\frac{1}{8}$ c, and finally an advance of  $\frac{1}{2}$ c, with the tone of the market at last unsettled. The Chicago calculations make the visible supply of grain 32,594,691 bushels wheat, 6,359,487 bushels corn, 4,124,666 bushels oats, 809,490 bushels rye, and 1,423,658 bushels barley. The figuring up of exports of breadstuffs from the Atlantic ports for the week show an increase of 24,029 barrels flour, 535,000 bushels wheat, and 29,000 bu. corn, and sum up 112,615 barrels flour, 1,178,000 bushels wheat and 122,000 bushels corn. In the late afternoon there came a dispatch 'via Chicago' from a reputable house there which read: 'We hear of a two million sterling failure in Liverpool.' at the same time Chicago weakened badly. Our market followed. From the best point of the day there was a sharp decline of  $\frac{3}{4}$ c. The market closed in unsettled form. With few to believe the failure report, there were, however, few who dared to disregard it. There is a nervous feeling noticeable at the close of business."

In the present somewhat irregular form of the flour market, buyers are able to find a good many bargains, getting liberal grading, if not actual concessions in prices. The demand for flour is mainly for goods under \$5.00 in value. Exporters are free buyers at the lower prices. The trade buyers are stirring about for patents, paying as high as \$5.50 for winters and \$5.75 for springs, and as high as \$6.00 for the favorite stencils, old flours always getting the preference. There is very little old flour here or left in the country. The firmness in wheat to-day has served to give a rather better tone to the flour market, by enlivening the demand, but holders are disposed to sell and prices are unimproved. There has been a fair demand and steady market for rye flour. Buckwheat flour is slow of sale, and nominally without change in price. Corn goods of all descriptions are ruling steady, with a moderate demand. For mill feed the inquiry is fair, with the supply and sales of about equal proportions.

#### BUFFALO WHEAT MARKET.

Buffalo, Oct. 22, 1884.

Our grain market the past week has been flat. The decline in wheat seems to have had a most depressing effect on buyers, and instead of any disposition on their part to stock up, they are looking for a still further decline. Wheat receipts continue large, and heavy shipments have been made to eastern markets, and still larger quantities would have gone forward, but canal freights have advanced  $\frac{1}{4}$ c per bushel, which has stopped all speculative shipments for the present. No. 1

hard Duluth, Buffalo inspection, sold at 81c. Straight lots withdrawn from the market. No. 2 hard 76@75 $\frac{1}{2}$ c; No. 1 Northern 76: No. 1 white offered at 81c; No. 2 red 80@81c; No. 1 long-berry 82 $\frac{1}{2}$ c. Corn in good demand for car loads and very little offered. No. 2 held at 55c; No. 3 48; lower grades, 45@47c. Oats dull and very little doing; car loads on track selling at 31c for No. 2 white. JAMES S. MCGOWAN & SON.

#### BUFFALO MARKETS.

FLOUR—City ground clear Northern Pacific spring \$4.75@5.25; straight Northern Pacific spring, \$5.25@5.75; amber, \$5.25@5.35; white winter, \$5.00@5.50; new process, \$6.25@6.75; Graham flour, \$4.25@5.25. Western straight Minnesota bakers, \$5.00@5.25; clear do, \$4.75@5.25; white winter, \$5.00@5.25; new process, \$6.25@6.75; low grade flour, \$2.50@4.00. OATMEAL—Ingersol \$5.75; Bannerman's \$6.00; Akron \$6.25. CORN—MEAL—Coarse, \$1.15; fine, \$1.25 per cwt. RYE FLOUR—In fair demand \$4.00@4.25. WHEAT—Active. Sales, 4,000 bu No. 1 hard Northern Pacific at 81c cash, 25,000 bu do seller last half Nov. at 81 $\frac{1}{2}$ c, 56,000 bu do seller all Nov. at 81c, 32,000 bu No. 2 do at 76 $\frac{1}{2}$ c cash, 15,000 bu do seller Nov. at 75c, 30,000 bu No. 1 Northern at 77c cash, 5,000 bu No. 2 do at 75 $\frac{1}{2}$ c cash, and 15,000 bu do seller Nov. at 75c. Winter wheat irregular; sales 3,500 bu sample red at 82c, four car-loads No. 2 longberry red at 84c, four do No. 1 do at 84c, eight do No. 1 white at 80c, two do sample red at 80c, two do No. 2 red at 82 $\frac{1}{2}$ c. CORN—Weaker. Sales, 14,000 bu No. 3 at 48c, and seven car-loads do at 49c on track. OATS—Mixed Western, 20@30c; No. 2 white 31 $\frac{1}{2}$ @32c; State from wagons, 40@42c. BARLEY—No. 1 six-rowed State, 75@78c; No. 2 do at 67c, No. 3 do, 61@62c on track. RYE—No. 2 Western 58c; State do. about 55c.

#### FOREIGN EXCHANGE.

The market for sterling was fairly active, but weak for long bills, owing to increase in the supply of bills. Present rates allow a very limited profit on gold imports. Posted rates closed at 4.81 $\frac{1}{2}$  for sixty days' and 4.84 $\frac{1}{2}$  for demand. The actual rates ranged: At sixty days' sight, 4.80 $\frac{1}{4}$ @4.81; demand, 4.83 $\frac{3}{4}$ @4.84; cables, 4.84 $\frac{1}{4}$ @4.84 $\frac{3}{4}$ , and commercial, 4.79 $\frac{1}{4}$ @4.79 $\frac{3}{4}$ . Continental exchange quiet and not strong; francs, 5.23 $\frac{1}{4}$ @5.23 $\frac{3}{4}$  and 5.21 $\frac{1}{4}$ @5.20 $\frac{3}{4}$ ; reichsmarks, 94 $\frac{1}{2}$ @94 $\frac{3}{4}$ ; guilders, 39 $\frac{7}{8}$  and 40 $\frac{1}{8}$ . The closing rates were as follows:

	60 days.	30 days.
London.....	41 8 $\frac{1}{2}$	4 84 $\frac{1}{2}$
Paris francs.....	5 21 $\frac{1}{2}$	5 19 $\frac{1}{2}$
Geneva.....	5 21 $\frac{1}{2}$	5 18 $\frac{1}{2}$
Berlin, reichsmarks.....	94 $\frac{1}{2}$	95 $\frac{1}{2}$
Amsterdam, guilders.....	40	40 $\frac{1}{4}$

#### THE COURSE OF THE WHEAT MARKET A SURPRISE TO US ALL.

It is a happy coincidence, says the New York *Produce Exchange Reporter*, when the leading thinkers and writers in the grain trade agree, as they now practically do. A comparison of the views that have in various ways been expressed by the principal corn trade papers, both at home and abroad, leads inevitably to the conclusion that the price of wheat is below its value. By exaggerating the products of other countries, and their own, interested parties have contrived to cheapen nearly everything they buy from the American. It is about time that this game was closed, and the chips passed in. Enough is as good as a feast.

At the expense of the agricultural interests of America and Europe, those of the manufacturing class are gradually being pushed forward.

Now it can easily enough be demonstrated, as it has been time and again in these columns, that the wheat reserves of the world, from the old crops were insignificant, those of the new were no more than enough to meet current wants. Nevertheless, prices shrink, and are now 30 to 40 cents per bushel lower than they were one year ago. Why? It would take a very wise man to explain. But the *Reporter* believes that it is largely due to the loss of confidence that has been engendered by the official and personal rascality of the times. It is a painful and depressing sight to look upon so many consumers as compared with the number of producers. Any man must know that if 100 men produce and 100 men do not, that producers are substantially caring for the consumers, and necessarily the work of the producers is twice as hard as it would be if all hands worked alike. This senseless way of working affairs of life seems the rule. The lazy and the worthless thrive off the industrious and thrifty, and why is it that men who arrogate to themselves that they are made in the image of the Supreme Being should not display as much sense as bees, surpasseth all understanding. When a drone gets into a hive the others sting him to death. Why then should not men who, so many of them, claim that animals and insects are devoid of intellectual capacity and possess only instinct, pursue the same course the bees do? Ask the theologians. But this is a wide departure from the main question. What

we are trying to find out is why, with less wheat in the world now, as we believe, than there was one year ago, the price should be 30 to 40 cents per bushel lower? Beasts are being fed freely with the inferior qualities of wheat now, whereas one year ago they had much less. In consequence of the deficiency of the last corn crop, and the resulting high prices on the tail end of it, which the reporter has so persistently foreshadowed throughout the past year, and the senseless depression and poor quality of a large portion of our new winter wheat, the food usually used by man has become that of the beast. And yet under these normal circumstance—with a wheat crop of, probably, not more than 485,000,000 bushels, there are many who believe that we have 200,000,000 bushels for export, when in far more prolific seasons, and when prices were very much higher, 186,500,000 was the largest quantity ever sent out of the country in a single harvest year.

No sound reasons can be adduced why wheat should be so low in value as it is now. And with a splendid corn crop, the more wheat a man buys, and the more meat he sells, for distant delivery, the better probably, will he be off.

#### NOTES.

Northfield, Minn., proposes to give \$4,000 towards a new elevator.

At Lawrence, Kan., Oct. 18, Moak's elevator was discovered to be on fire. In a few minutes the whole building was in flames, and despite the exertions of the fire department the entire establishment was consumed in a short time. Loss, \$25,000.

"Take my advice," said a well-known St. Louis speculator, "and don't buy until December. Then invest everything you have in wheat. Wheat is depressed now, but as soon as Blaine is declared elected stocks will boom, and with them you will see wheat climbing up in time to buy you some Christmas presents."

On October 15, an elevator at Chester, Minn., owned by Van Dusen & Co., took fire in the roof. There were 1,200 bushels of wheat and 1,200 of barley in the building at the time. The loss was total, as there was no insurance, and is estimated at about \$8,000. It is understood that the company has already made preparations to rebuild this fall.

Mr. Brockman, one of the principal creditors of the Red Wing Elevator Company, says that no satisfactory arrangement has been made for the settlement of the debts, although they thought a short time since that they would be able to pay 75 cents. In this case Mr. Brockman thinks he will be secured for the other 25 cents on the personal indorsements of the notes he holds.

On Oct. 14, the elevator at Chester, Minn., owned by Van Dusen & Co., took fire in the roof, as is conjectured, from the sparks from a side-track locomotive. There were 1,200 bushels of wheat and 1,200 of barley in the building at the time. The loss was total, as there was no insurance. The loss is estimated at about \$8,000. It is understood that the company has already made preparations to rebuild this fall.

Receipts of wheat at Minneapolis for the week ending Oct. 15, were 1,500,000 bushels, the largest ever known; with wheat ruling the lowest ever known. The miller's association has reduced the price of country wheat 2 cts. It is evident that farmers are selling very freely, and every decline makes them more anxious to realize. There is little prospect of an improvement in prices, though of course temporary spurts of strength are to be expected.

Mr. Porter, the State Commissioner for preparing the Minnesota flour exhibit at New Orleans, has secured the services of Mr. Burr Deuel of this city, says the *Winona Republican*, to visit the principal mills throughout the State, with a view to securing as complete a representation as it is possible to make. Mr. Deuel will probably be placed in charge of the exhibit when it is finally completed—Mr. Porter himself designing to accompany it to the Exposition and to secure for it a proper display. The selection of Mr. Deuel for the purpose named in connection with this important industry is a most excellent one. He is intelligent and discreet, and will be strictly impartial as between the interests of the various contributors where such interests may seem to conflict.

"You would not believe it, perhaps," said an old member of the St. Louis Exchange, picking up the scraps of a lottery ticket which were scattered over the rotunda, "but there are members

FIRST AND ONLY PREMIUM  
OVER ALL COMPETITORS!  
PURCHASE ONLY  
FROM RELIABLE DEALERS.

of this Exchange who invest in these things every month, risking all the way from \$1 to \$10 or more and never realizing a cent. Some of them have been doing it for ten years past, investing so much every month, and each month hunting in vain through the list of winning numbers for the ones which they had purchased. Friday morning I walked into the reading-room and found that the list of winning numbers had been cut out of the New Orleans paper half an hour after it was put on file. Then there is another crowd of speculators and solid members of the Exchange who have each of them a book, issued by some oracular personage, giving prophecies on the state of the crops and the markets, and this they consult before they undertake any enterprise. I suppose half the frequenters of the pork corner possess one of these oracles."

JAMES S. MCGOWAN & SON,  
SHIPPING AND COMMISSION MERCHANTS.

Choice Milling Wheats a Specialty

Room 60 Board of Trade Building.

BUFFALO, N. Y.

No Charge for Inspection

JOHN C. HIGGINS & SON,  
Manufacturers and Dressers of

MILL PICKS

163 KINZIE ST., CHICAGO.



GOLD MEDAL—SPECIAL, 1ST ORDER OF MERIT.



Send for Circular and Price List.

Picks will be sent on 30 or 60 days' trial to any responsible Miller in the United States or Canada, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canada.

1831 THE CULTIVATOR 1885  
AND  
Country Gentleman

THE BEST OF THE  
AGRICULTURAL WEEKLIES.

THE COUNTRY GENTLEMAN is the LEADING JOURNAL of American Agriculture. In amount and practical value of Contents, in extent and ability of Correspondence, in quality of paper and style of publication, it occupies the FIRST RANK. It is believed to have no superior in either of the three chief divisions of Farm Crops and Processes,

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Live-Stock and Dairying,

while it also includes all minor departments of rural interest, such as the Poultry Yard, Entomology, Bee-Keeping, Greenhouses and Grapery, Veterinary Replies, Farm Questions and Answers, Fireside Reading, Domestic Economy, and a summary of the News of the Week. Its MARKET REPORTS are unusually complete, and much attention is paid to the Prospects of the Crops, as throwing light upon one of the most important of all questions—When to Buy and When to Sell. It is liberally illustrated, and is intended to supply, in a continually increasing degree, and in the best sense of the term, a

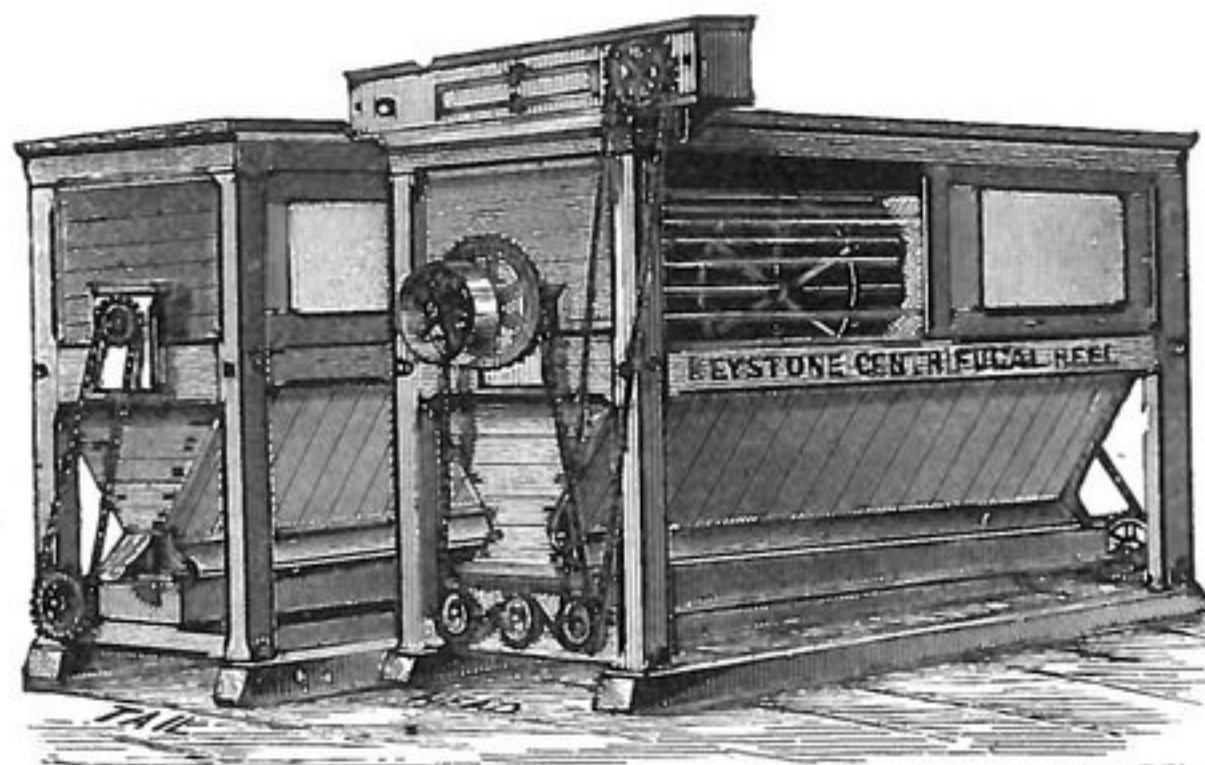
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Although the COUNTRY GENTLEMAN has been GREATLY ENLARGED by increasing its size from 16 to 20 pages weekly, the terms continue as heretofore, when paid strictly in advance: ONE COPY, one year, \$2.50; FOUR COPIES, \$10, and an additional copy for the year free to the sender of the Club; TEN COPIES, \$20, and an additional copy for the year free to the sender of the Club.

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## KEYSTONE CENTRIFUGAL REEL

—PATENTED MAY 6th, 1884.—

Drag Brush Feed, Tightest Heads, Best Results. Cheapest and Best on the Market. Adapted to all Kinds of Milling. The New Drag Feed Thoroughly Protects the Silk. Sent on Trial to any Responsible Miller.

### ROLLER MILLS, SCALPING REELS, PULLEYS, SHAFTING AND ALL KINDS OF MILL IRONS.

Full Stock of Dufour and Dutch Anchor Bolting Cloth.

BEST QUALITY FRENCH BURR MILLSTONES, FOR MIDDINGS, WHEAT AND FEED.

Leather, Rubber and Cotton Belting, Smut Machines, Purifiers and everything belonging to a Flour Mill furnished at Lowest Market Prices. For Circulars, Prices and Full Particulars, address the Manufacturer,

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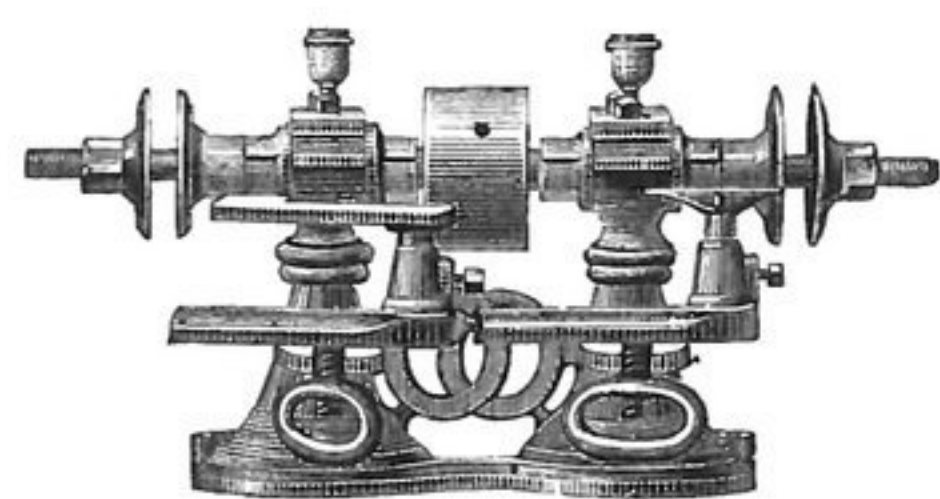
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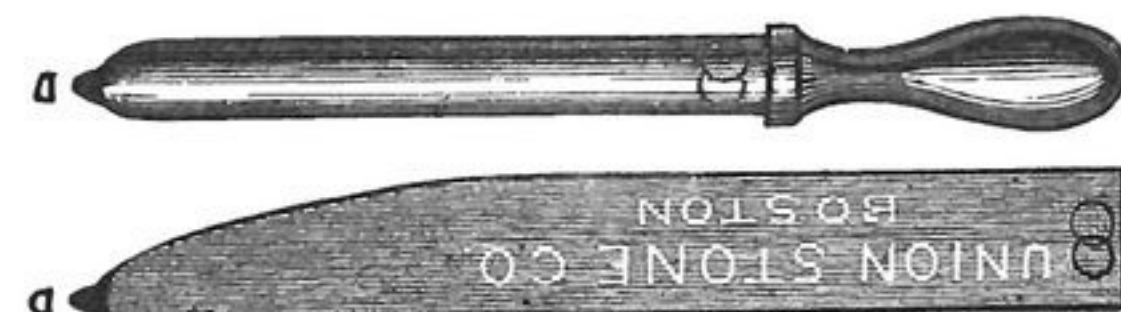
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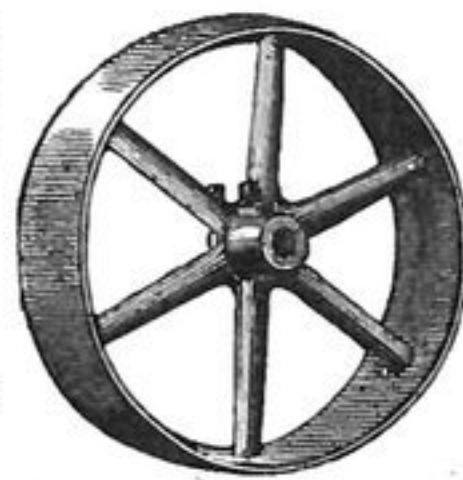
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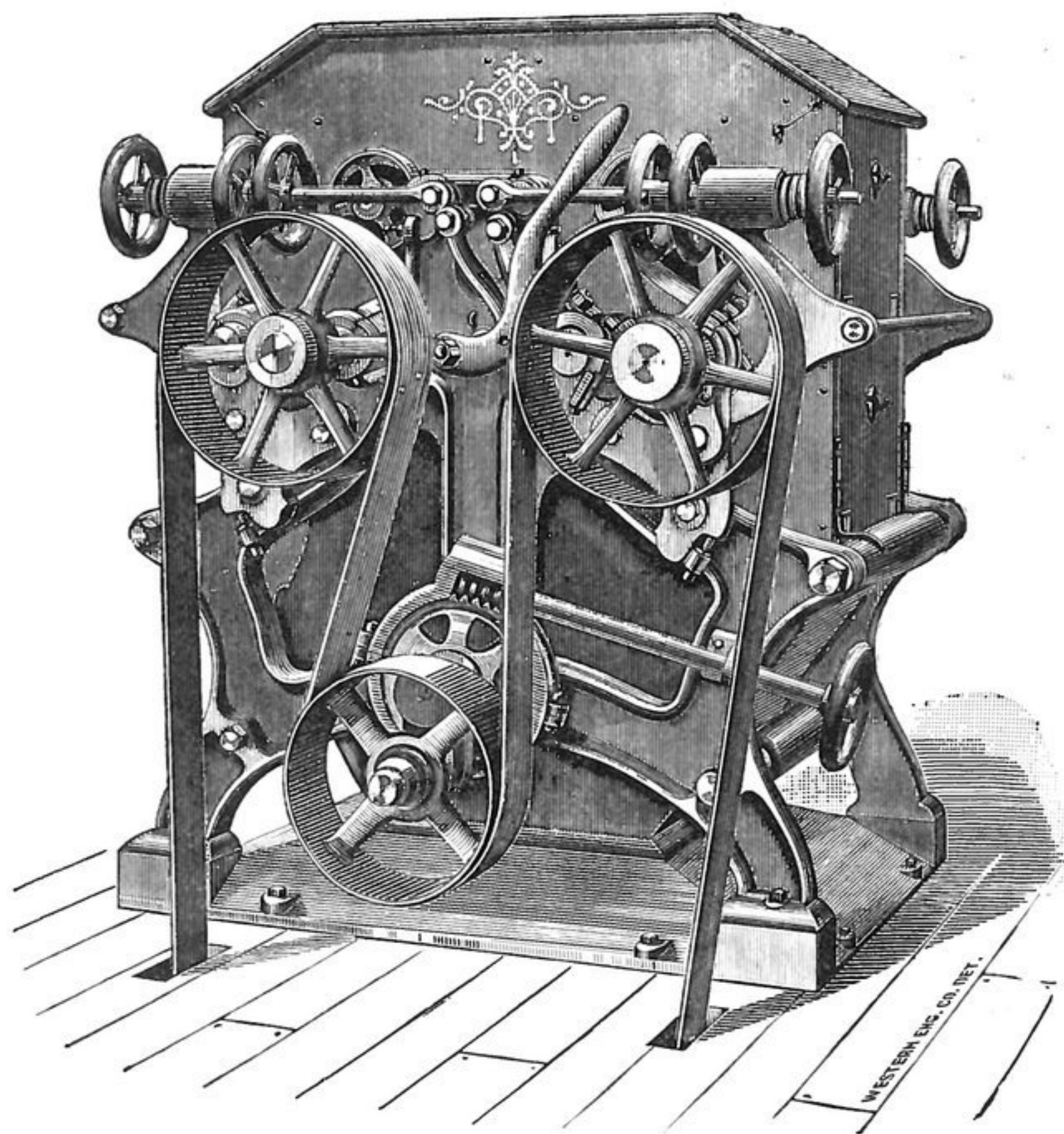
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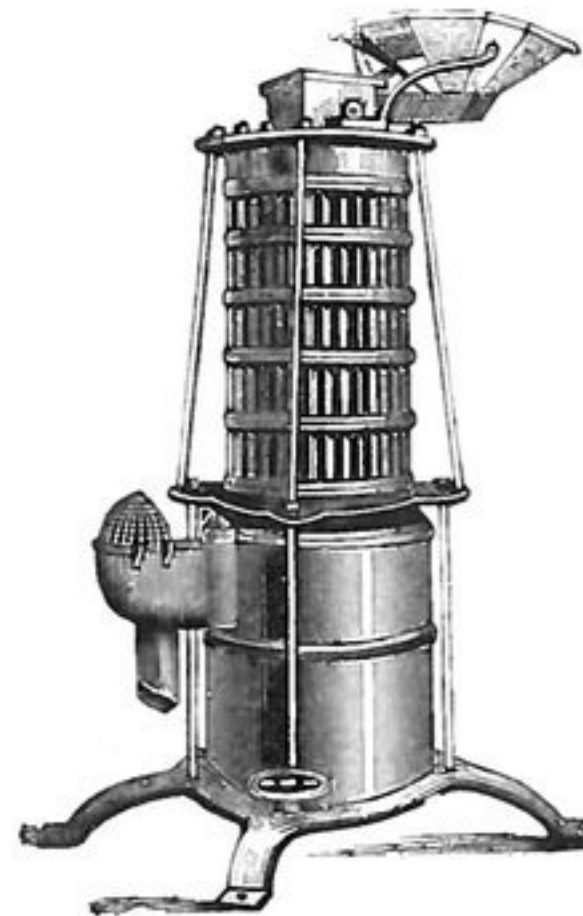
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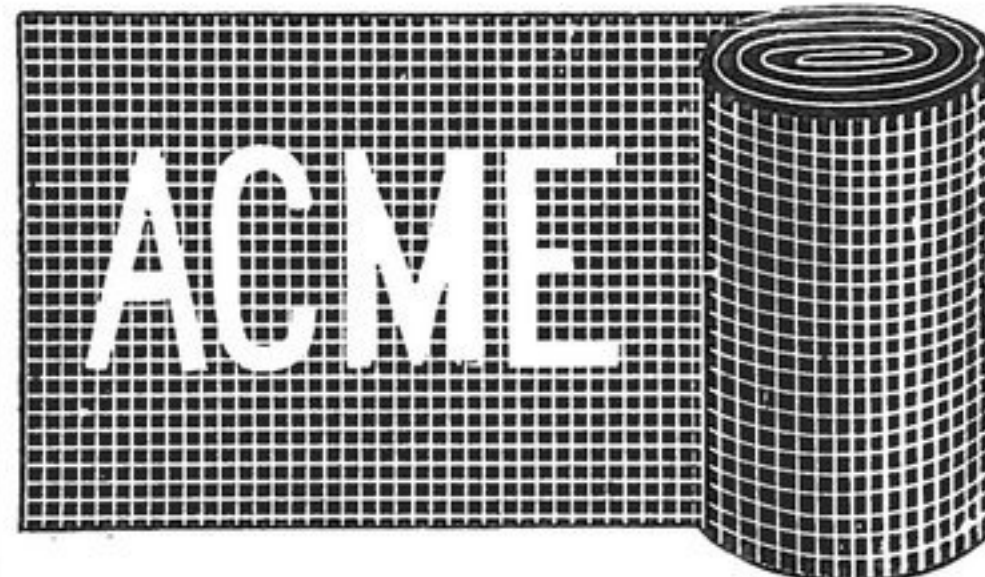
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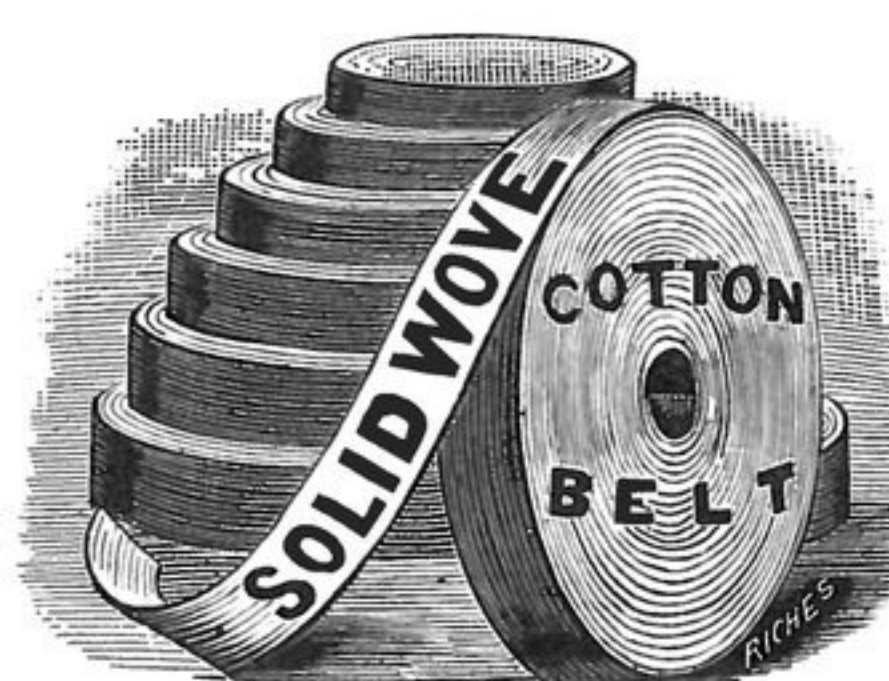
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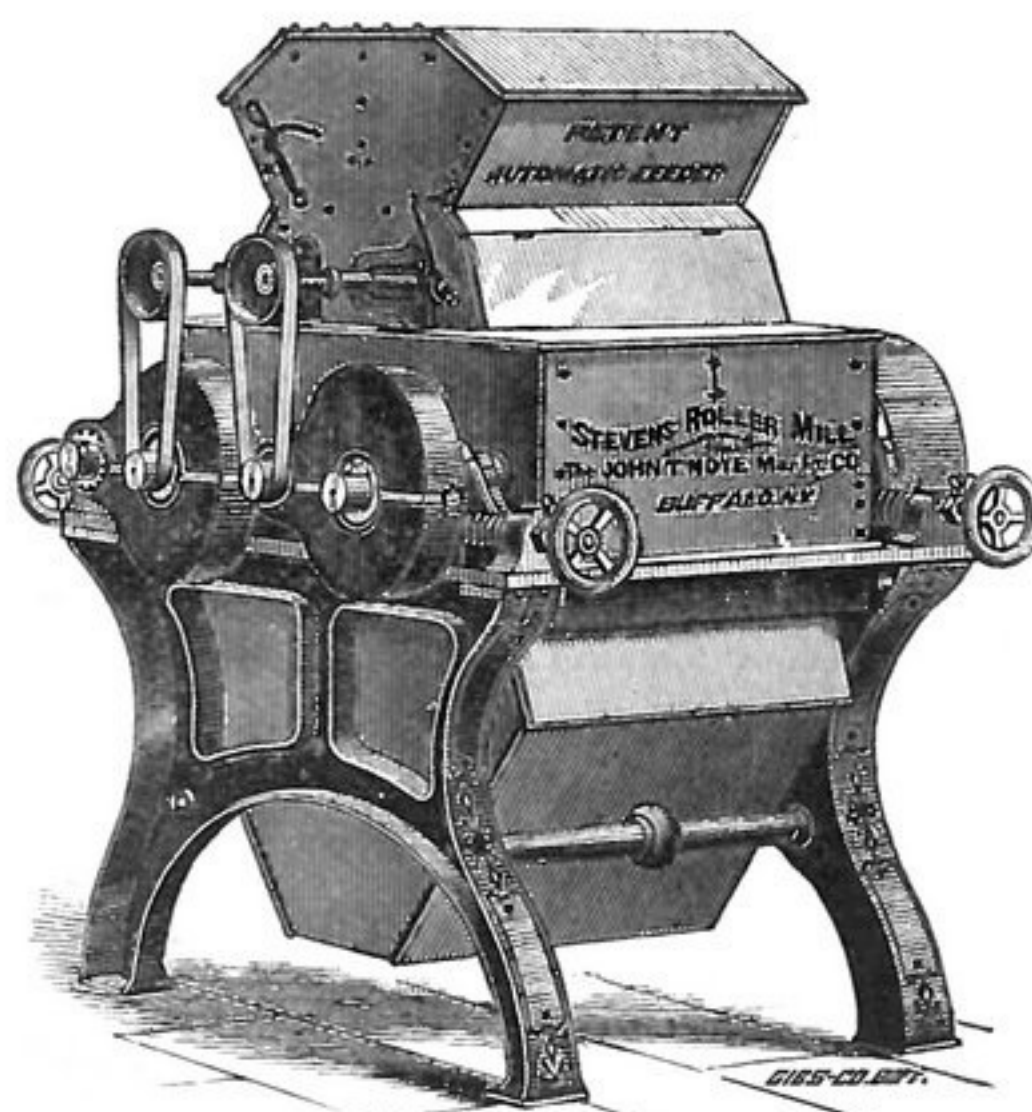
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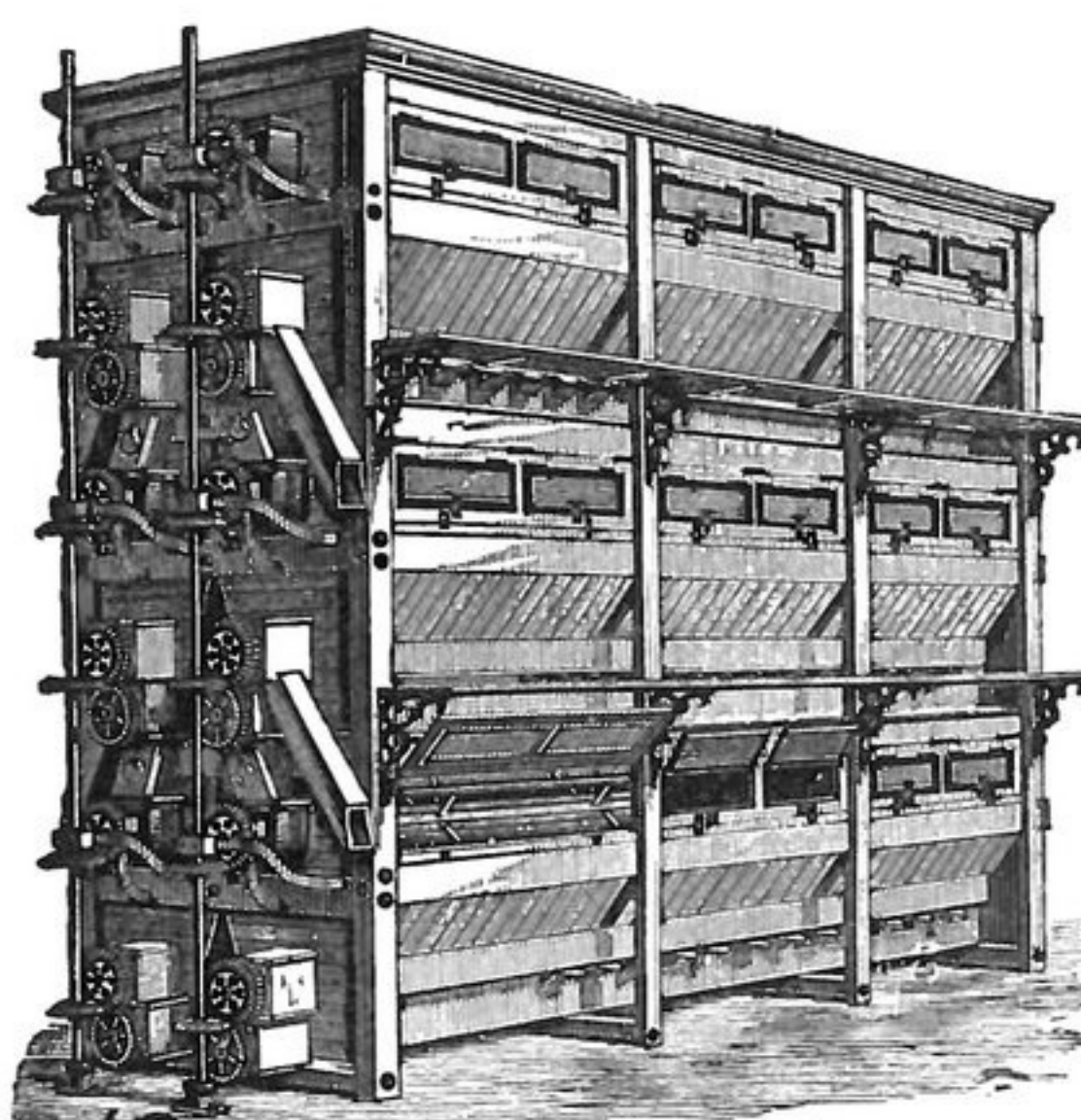
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